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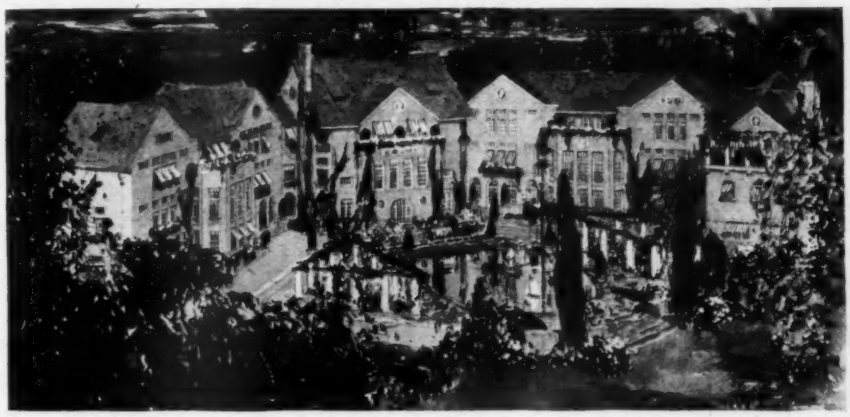

THE YARD, CHICAGO NURSERY AND HALF ORPHAN ASYLUM
HOLABIRD & ROCHE, *ARCHITECTS*

The Work of Holabird & Roche, Architects

WE are all more or less familiar with the monumental works of the various architectural organizations in this country as such works are usually widely published and studied. Are such works a true criterion of an organization's capabilities? Are we not too prone to base an evaluation of the organization on such works? By extreme effort an ordinary organization can be so amplified and co-ordinated that a really creditable work is produced, but the real ability of an organization is more truly indicated by the mass of production—that which makes up the daily grist. Meritorious works can only be the result of labor expended, a real effort, and when this is done consistently on minor projects through a period of years and under all conditions, it bespeaks an honesty of purpose and a real enthusiasm and love for architectural creation. In fact any successful organization must be imbued with the desire to participate in good architectural performances and anticipate the satisfaction resulting from work well done.

The object of this showing of the work of Holabird & Roche in this and succeeding issues is to illustrate some of the minor projects that have been executed by them. The examples embrace constructions of a diverse character, a study of which will make manifest the ability of such an organization to solve the problem at hand. Although this organization has constructed or enlarged some thirty telephone exchanges, it would rather resent the intimation that it was a specialist in such works. It is true that such structures include many features special to the operation of telephones and they are of a character that require very careful study and exact planning. Holabird & Roche contend, however, that being specialists implies a limited ability and that an architectural organization properly set up can produce a structure adequate to the demands for whatever purpose it is intended.

The larger works of this organization are well known to all students of American architecture. Of them are the County and City Building at Chicago; the Hotels La Salle and Sherman; office buildings, Otis, Lumber Exchange, Monroe, McCormick, Marquette, Monadnock and Old Colony; department stores, The Boston, Mandel Brothers' and Rothschilds'; the University Club and many others in Chicago and other cities.

To this organization belongs the credit of having planned the first all-metal frame skyscraper ever

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erected, the twelve story Tacoma Building erected in 1888. It can be said that all of the developments that make possible the great structures of today, including the mechanical equipments and sanitary conveniences, have been made within the existence of this organization and to which it has made many notable contributions.

THIS firm originally consisting of William Holabird and Ossian C. Simonds, began business in 1880. In September, 1881, Martin Roche became a member of the firm under the name of Holabird, Simonds & Roche. In January, 1883, Ossian C. Simonds withdrew from the firm which then became Holabird & Roche. In 1896, Edward A. Renwick was admitted into the partnership but no change was made in the name of the firm. These three gentlemen are still active in the affairs of the organization.

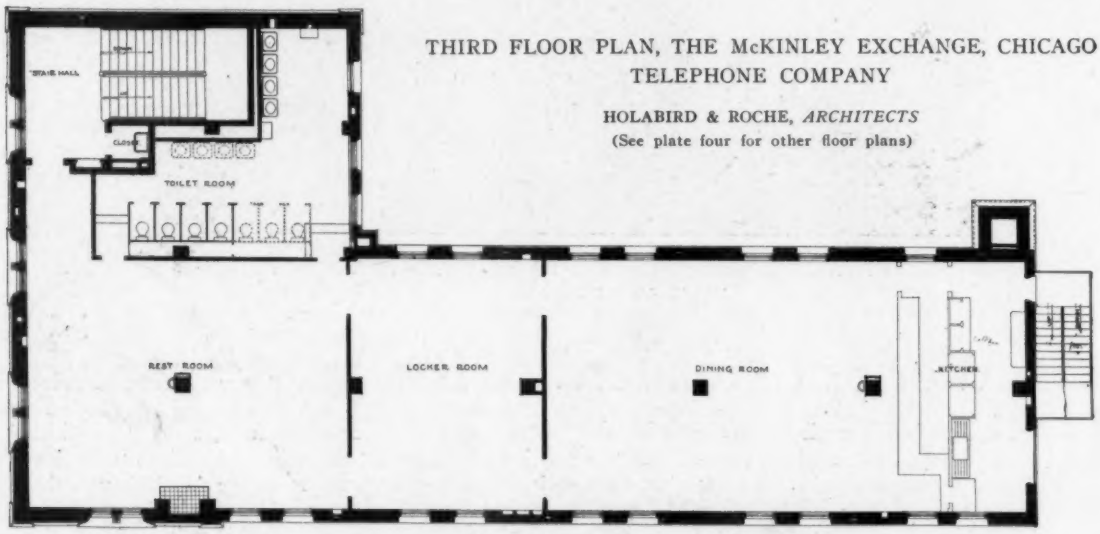
The four decades just elapsed have probably been the most important in architectural history. It is apparent that the housing of manufacturing plants, commercial enterprises, offices, governmental departments, social, educational and religious organizations; penal, eleemosynary and correctional institutions; hospitals and sanitaria; hotels, clubs and residential buildings—all have progressed more than during any four centuries of the world's history. Those who have contributed to this development will find their place in the architectural histories to be written in the future.

This organization was one of the first to be set up along modern lines. Its personnel comprises not only architects but engineers capable of designing every feature of modern building construction, specification writers, superintendents and accountants.

THE telephone exchanges erected by the Chicago Telephone Company in outlying districts are provided with ample grounds so that light is provided on the sides and rear, allowing space for tennis courts, flower gardens and grass plots. The completed structure is to occupy only fifty per cent of the ground area. These buildings are not detrimental to the best residential districts and are constructed so as to be as fire resisting as possible.

It is necessary to plan the first unit with a view to future expansion and this requires that the building possess proper architectural appearance at all stages of its development. The drawings of the elevation of the McKinley Exchange indicates how this is accomplished. The design of the McKinley Exchange is rather typical of the style approved by the company. The Kildare Exchange is one of the deviations from this standard. The illustrations of these two exchanges show the first units to be constructed. A completed exchange is a duplication of the plan shown.

In the basement are located the cable vaults, storage batteries, boiler room and cooling plant for drinking water. The first floor contains the apparatus room in which is placed the distributing frame, power machinery, testing apparatus, repair department and wire chief's office. The second floor is occupied by the switchboard. The third floor contains the rest room, toilet and locker rooms, dining room and kitchen. Buildings four or more



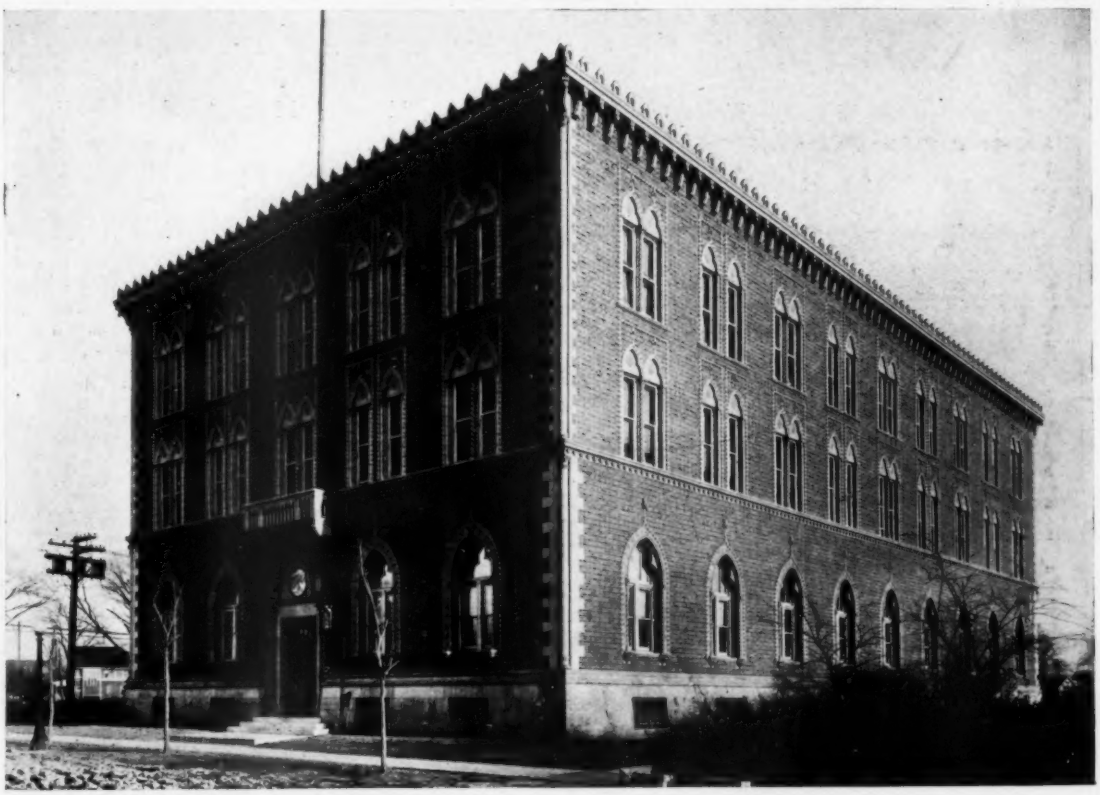
THIRD FLOOR PLAN, THE McKINLEY EXCHANGE, CHICAGO TELEPHONE COMPANY

HOLABIRD & ROCHE, *ARCHITECTS*

(See plate four for other floor plans)

stories high are provided with a passenger elevator and the added stories devoted to switchboard operating rooms.

In the Franklin Exchange no business is conducted with the public and the design well expresses the idea of an occupancy devoted exclusively to operating purposes. The design is in the Italian Romanesque style of the Venetian type, giving a certain individuality to the building without undue cost. The sides and rear of the building provided for. All windows are of metal frames and sash with wire glass. The windows on sides and rear have the added protection of automatic rolling steel shutters in front of the windows and which are placed back of the masonry spandrel above the windows and concealed from view. The exits consist of two enclosed stairways back of the elevators and two enclosed smoke proof stairs in the rear, which are entered from an exterior balcony.



THE KILDARE EXCHANGE, CHICAGO TELEPHONE COMPANY, CHICAGO
HOLABIRD & ROCHE, *ARCHITECTS*

are faced with the same brick and ornamentation as the front. The wall surfaces are of dark red vitrified paving brick, Bedford stone strimmings and the base on the street front is of granite and extends to the second floor. The court, facing south, is faced with white enamelled brick and terra cotta.

This building has a street frontage of 135 feet 5 inches and is 181 feet deep with 16 foot alleys on the west and south sides. As erected it is eleven stories high, with basement and partial sub-basement. It is so designed that five additional stories can be added. Fire resistance has been especially

Men are provided with locker and rest rooms, toilet and showers. Women operators are provided with dining, locker and rest rooms, kitchen and hospital. In addition there are provided drying rooms where rain coats and wet clothing can be properly dried. An assembly room is provided for concerts by their various choruses and bands and several committee rooms for smaller meetings.

About thirty miles west of Chicago, the Chicago Telephone Company has erected a country home where their women employes may, at nominal cost, spend their vacations make short visits or spend periods of rest during convalescence. It is not a

LIBRARY
THE DETROIT EDISON CO.
JUN 6 1921

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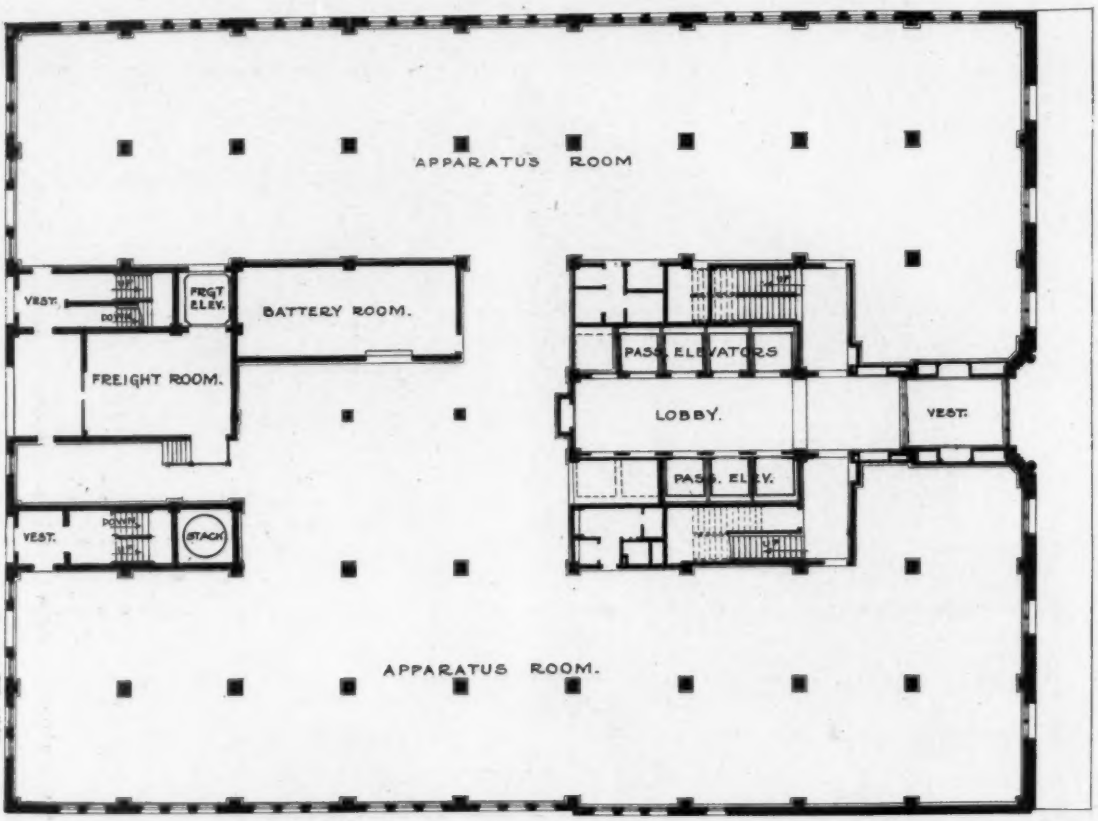
hospital or charitable institution. It is known as the Margaret Mackin Hall, named in honor of the "best telephone operator in the world."

The public institution, usually known as an asylum or home, is generally designed with a view of presenting an imposing appearance with domes, towers, stately classic porticoes and whatnot. The interior is planned with large rotundas and wide corridors of great length, giving an impression of formality and repression which exerts a depressing effect on the normal visitor. The effect on the unfortunates housed therein must be of a greater intensity. The idea that such places should be designed as places of human habitation, homelike and congenial, seems to have been overlooked. Perhaps the influence of the word "public" is the cause of this, as communities are apt to outdo their neighbors in outward show rather than by inward workings.

In the Chicago Nursery and Half Orphan Asylum all of the traditions for such institutions have been discarded and the institution was planned along rational and humane lines. The half orphan presents some problems of unusual interest and these factors were considered by the architects. The plant is a success and it is frequently visited and inspected by architects and committees from all parts of the United States and Canada. The usual depressing influence of such an institution is wanting and one scarcely realizes its purpose measured by experiences in visiting similar institutions.

The institution stands on a splendid location with ample grounds for all of its needs. There is nothing monumental about it. It stands unpretentious but very interesting in all of the varied and charming aspects which it presents, all made possible through its irregular plan. From all viewpoints, both front and rear, is seen the careful designing which is uniformly good in every particular. The simplicity of the designing makes this building specially expressive of its use—a home for children.

The keynote of the design is the elimination of waste space in the interests of economy and avoidance of the usual institution feeling. In plan the building is really a group of separate buildings con-

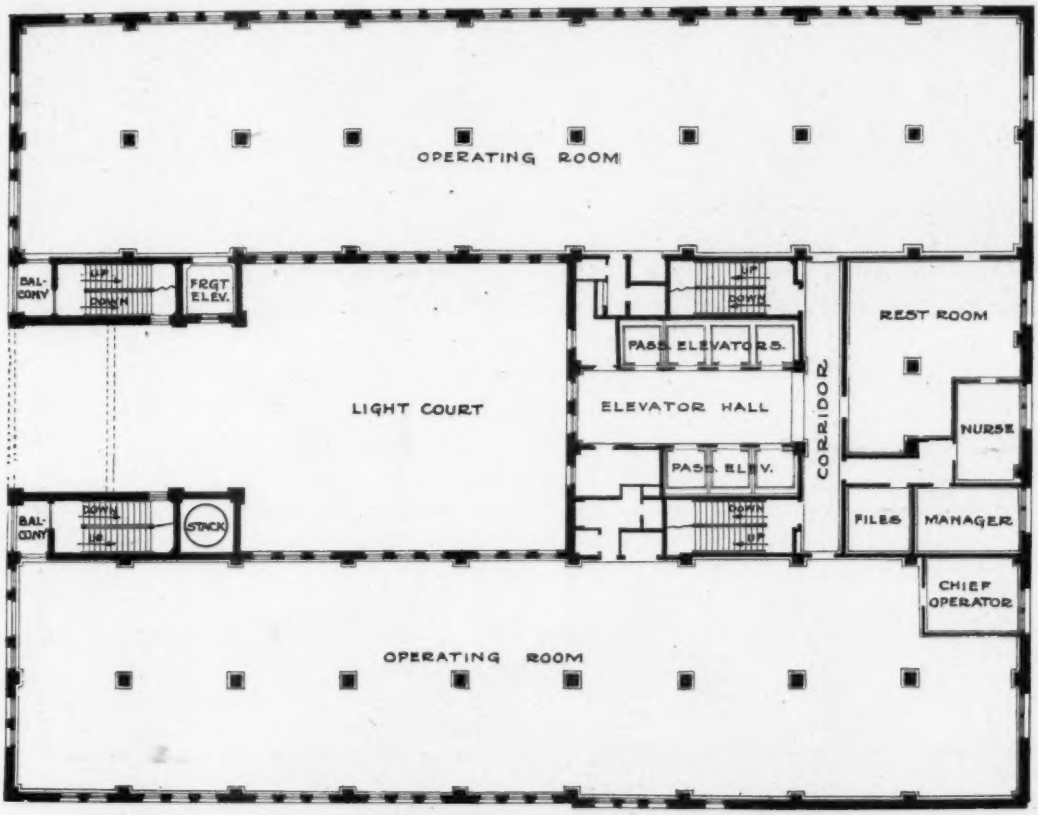


FIRST FLOOR PLAN, FRANKLIN TELEPHONE EXCHANGE, CHICAGO TELEPHONE CO., CHICAGO
HOLABIRD & ROCHE, *ARCHITECTS*

nected by stair halls, shut off by fire doors, and with an entire absence of corridors.

The buildings are three stories high with part basement, in which is located the mechanical plant, laundry, manual training, trunk and store rooms. The story heights are nine feet, six inches in the clear generally, the kindergarten is twelve feet, eight inches high and the gymnasium extends up into the pitch of the roof. The exterior is faced with rough finished brick of pastel shades and the roof covered with heavy graded slate. The interior finish is simple and is gray stained oak. The floors are finished cement with linoleum covering; cement base and wainscot throughout. The plumbing fixtures are of three sizes for children.

The central building contains the administrative offices, library, kindergarten and gymnasium. The west wing, first floor, contains dormitories, playroom, sun porch, lockers, toilet rooms and caretakers quarters, with a capacity for twenty-eight children under three years of age; the second floor has the same facilities and capacity for children three to six years of age; the third floor has the same capacity for those more than six years of age. The south wing, first floor, has a large lobby, dining rooms, toilets and pantry; the second floor is the same as the west wing with capacity for twenty-eight children three to six years old; the third floor has dormitory for fourteen children over six years old and an infirmary with twelve beds. The service wing at the extreme south has, on the first floor the kitchen, store room, caretakers and servants dining rooms, canning room, engineers' and janitor's quarters; the second floor contains the sleeping quarters for the caretakers and servants; the third floor cares for twenty infants in two wards with changing rooms, sun porches and roof terraces.



FOURTH FLOOR PLAN, FRANKLIN EXCHANGE, CHICAGO TELEPHONE CO., CHICAGO
HOLABIRD & ROCHE, *ARCHITECTS*

Sleeping rooms are provided for one janitor, two engineers, one matron, one housekeeper, one seamstress, thirteen caretakers, two teachers, two nurses, twelve servants—a total of thirty-five. Accommo-

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VIEW FROM SOUTHWEST, YARD ELEVATIONS

THE ISOLATION PAVILION
CHICAGO NURSERY AND HALF ORPHAN ASYLUM, CHICAGO, ILLINOIS
HOLABIRD & ROCHE, *ARCHITECTS*

dations provided for one hundred and forty-six children, with an infirmary of twelve beds, making total of one hundred and fifty-eight beds.

In the group is an observation and isolation building, 57x37 feet in size, one and one-half stories high, furnishing accommodations for fifteen girls and fifteen boys, diet kitchen, pantries, quarters for doctors and caretakers, toilets and baths.

Taking the entire group in relation to the total number of children's beds, there is 3,106 cubic feet per bed at the cost of $960 per bed.

The practice of architecture involves much more than the mere planning of a building for which a fee is received. There is a moral obligation included which demands that the building be suited for its purpose and render the utmost service to its occupants. When the occupants are children or those physically or mentally afflicted, the duty of the architect is greatly increased. The occupants of public institutions are not there by choice, but as a matter of necessity, or else are restrained for the public welfare. To the architect who appreciates these facts the study of this plan or the inspection of the plant in operation, will be of intense interest.

CENTRAL PAVILION AND MAIN ENTRANCE
CHICAGO NURSERY AND HALF ORPHAN ASYLUM, CHICAGO, ILLINOIS
HOLABIRD & ROCHE, *ARCHITECTS*

A POWER plant is not usually considered to be an attractive proposition from the purely architectural viewpoint. Like every other structure its design should properly express its purpose. We are all accustomed to power plants for a few hundred horse power and they are easily hidden in the structure which is largely devoted to other purposes. To house 220,000 horse power is a problem worthy of the most careful study. Its magnitude demands that the treatment be dignified and worthy. While these buildings serve a mere utilitarian purpose, their immense size makes them a conspicuous object and a duty to the public and the surrounding property owners is to be considered.

The Northwest Power House of the Commonwealth-Edison Company, Chicago, is a plant of the capacity mentioned. Two buildings are required, one for the boilers and generators and one for the distributing of the electric power through the busboard and switches. The design is severely plain

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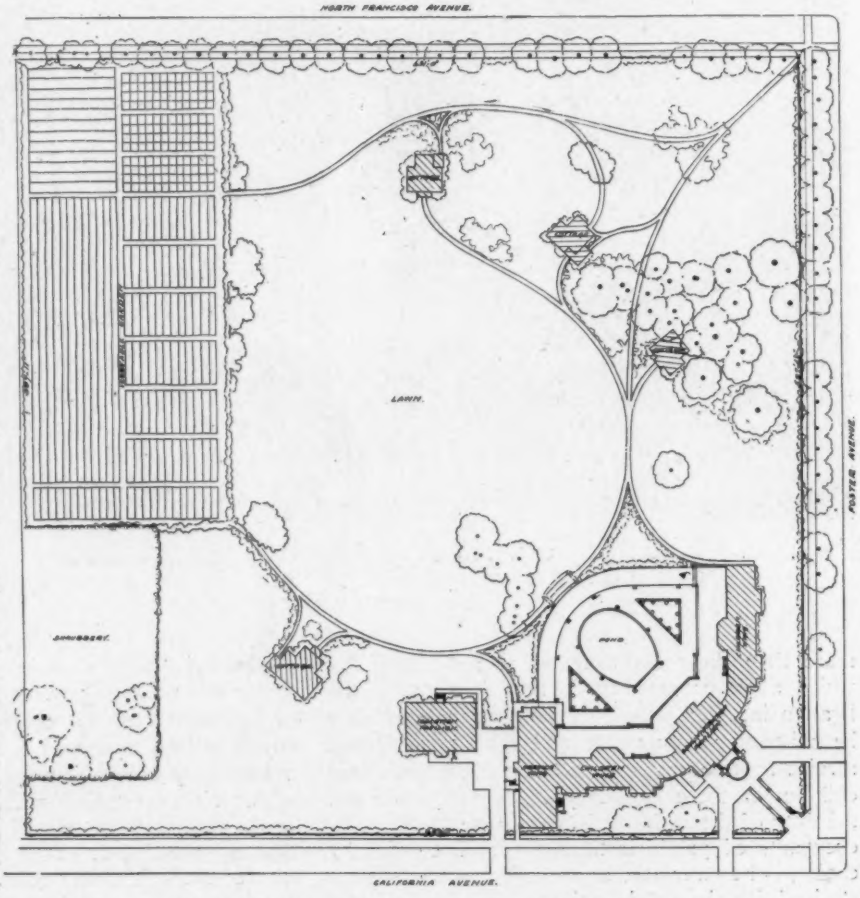
THE CARETAKER'S HOUSE, MARGARET MACKIN HALL,
CHICAGO TELEPHONE COMPANY, CHICAGO
HOLABIRD & ROCHE, *ARCHITECTS*

and treated with regard to the mass. The disposition of the ornamentation and fenestration is very carefully studied and the result is satisfactory. A very large, dark red impervious brick is used throughout the exterior except the fan, the coping and window-sills. The large panels in the distributing building and the manner of laying the brick are very effective.

Some power houses of extensive capacity have been designed in which details and motifs were adapted from classic, renaissance or gothic buildings. When we consider that the development of steam and electric power is a modern enterprise the temple or French Renaissance palace, in whole or in part, cannot express properly the modern power house. It is unfortunate that the owners and operating engineers of such plants insist on having the chimneys painted black. It is true that certain kinds of black paint are a very effective protection against the corrosion of steel stacks, but appreciation of appearances and the interest of the public should be considered. If such chimneys were painted in strong colors or light blue or pearl gray they would not be so noticeable and would really appear larger than when painted in black. The indistinctness brought about by a proper color scheme would cause this effect and the tops would be made barely visible by the light colored vapor emitted from the tops.



PLOT PLAN, CHICAGO NURSERY AND HALF ORPHAN ASYLUM
HOLABIRD & ROCHE, *ARCHITECTS*

Madrid's Scheme of City Planning

A REMARKABLE transformation is passing over the capital of Spain in the matter of its general appearance, and particularly its public, its semi-public and private buildings. The program of reconstruction has already been executed. In six or seven years the changes that have been made have been enormous and are deeply impressive. The new Casa de Correos, the many new banks—which indeed are more like palaces than banks—the new hotels, new buildings of every description, the new underground railway, and of course the Gran Via with all its new magnificent structures, including the Naval and Military Club—all these, and many more, make up a new Madrid that would puzzle somewhat those who only knew the old one.

Such a great process of transformation is unique in the history of cities; it has been necessitated by the peculiar circumstances of the history of Madrid, and the vastly changed fortunes of the country which, now rich, wishes for a better capital for itself. And while one speaks so much of Madrid, this note of transformation, improvement and beautification is repeated in many other parts of the country. It is heard clearly in Bilbao and in Vigo, and its echo rings in Barcelona.

The acknowledged chief architect of the country, who has designed and carried out a majority of the most important constructions of recent years, is Antonio Palacios, who gave an interesting interview to a representative of the daily press, at his residence in the very center of Madrid.

During an interval in the conversation, he mounted to what he playfully called his Madrilenian "azotea," one of the highest points of Madrid. From the mass of masonry the Casa de Correos and the Rio de la Plata Bank stood out prominently in one direction, and it was curious that the bank seemed to vie for prominence with all the rest, not to be beaten either. Its huge Corinthian columns rose majestically, and the "atico" which rests upon the massive square block seemed like the lid of a gigantic and beautiful box.

"That is rather interesting in a way," Mr. Palacios said, "for in the case of that bank I had a peculiar problem to solve. As you see it stands across the plaza almost opposite to the new Casa de Correos, which was built before it, and which obviously challenged comparison with any other architecture in the neighborhood, and challenged it fearlessly.

"The difficulty, however, was, that they had but a small plot of land for it, 1,000 square meters, since they desired this site in the Alcala at the corner of the Calle de Barquillo, and in the other direction along the Alcala they were absolutely stopped by the building and gardens of the War Department. The ground occupied by the Casa de Correos is twelve times as extensive as that at the disposal of the bank, but my building was to bear a certain comparison. There it is!" It certainly bears the comparison well, for it stands up strongly and boldly among all the edifices of the capital. It is in a neo-Grecian style, and it is stated that those marvelous columns cost 70,000 pesetas each.

"The problem of the architect now is difficult. There is Vigo, for instance. I am greatly interested in Vigo, which has, I think a magnificent future as the chief Atlantic port of Europe. I am interested in it professionally as well as personally. The new theatre which I planned, and which will be one of the finest in existence, is approaching completion. Vigo, as it is, has been a natural evolution like other cities, but its situation is very difficult for development, because it lies largely on a slope.

"Vigo will be different from most other cities in Spain; it is even different now. It is in constant, close, and what you might call personal contact with the English ports; it has English influences upon it, and when it wants a new thing it is inclined to look toward England, to Liverpool or London, with which it is in continual communication, for an idea.

"As to improvements and new buildings in general," Mr. Palacios containued, "the chief and really only difficulty, in the matter of a speedy fulfillment of our ambitions and intentions, is the labor one. There is the universal desire on the part of municipalities, private communities and the people to build and improve, and the money is always ready. The money is the least of all difficulties; it is, in fact, no difficulty at all."

The scene of conversation being transferred from the housetop to the studio, the architect produced the scheme of his magnum opus, the plans for the reconstruction of the whole of central Madrid, which he now exhibited for the first time. It is indeed a marvelous proposal. The plans are now being laid before the "ayuntamiento," or municipal council, for consideration.

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Architectural Quicksands

By CLINTON H. BLAKE, JR., *of the New York and Federal Bars*

Part III

Protect Your Rights in the Plans

IN another rather interesting case an architect developed a very unique and clever plan for a certain type of semi-public building. The plan combined unusual elements both of utilitarian and artistic merit. After the architect had made the preliminary sketches, been responsible for the completion of the plan and completed the drawings, the client paid him for the work done up to that point, and then turned over the work to another firm of architects, who proceeded with it and supervised the erection of the building. I do not know whether these latter architects were aware of all the facts, and prefer to assume that they were not in view of the ethics involved. The net result unquestionably was, however, that the architect whose talent and ability was responsible for the idea received a very modest sum for the sketches and plan, and that the chief compensation was received by the architects who superintended the construction in accordance with the plans which my client had made. There was nothing which the latter could do as between himself and his client, as he had neglected to make any contract or secure any memorandum covering the relationship between the client and himself. In the absence of an agreement, the law governing the case provided that the plans belonged to the client and not to the architect, and the client, having paid for the plans, had consequently a legal right to turn over the work of superintendence to the other architects. If my client had had a contract, he would have been protected, as the contract contains a simple but sufficient provision vesting the ownership of plans in the architect and covering the contingency in question. There would consequently have been no possibility of the client taking the action which he did, and the architect would not have laid himself open to the treatment which was thus accorded him.

Alternative Forms of Contract

THIS architect has now adopted, as a regular policy of his organization the making of a contract between his clients and himself. Recognizing the fact that in many cases it is not practical to insist upon a full form of contract which may look a bit too formidable to some clients, we have prepared for him two alternative forms of contract. The one is in a full form, providing for all contingencies which are at all likely to arise, and covers the rights and relationship of the parties in detail. This form is, of course, preferable where it can be employed, as it is the result of a study and knowledge of the difficulties which various clients have actually experienced in their practice, and provides against a repetition of them. In its printed form it is on one sheet of paper. The face of the paper, where the signatures are attached, bears only a few lines reciting the agreement of the parties, and on the reverse side, in fine type, are given the general conditions and the like embodied in the contract. This arrangement makes the contract much simpler appearing than would be the case if the conditions, were embodied in the formal agreement clause at lengths on the face of the contract.

Notwithstanding the care which has been taken to make the contract appear as simple and innocuous as possible, there are inevitably now and then clients who do not care to sign the long form of contract, or clients who might be quite willing to sign it, but to whom the architect does not care to suggest signing it. For these cases the second and so-called short form of contract has been prepared. It consists of a very few lines reciting the employment of the architect and incorporates, among its terms, simply by reference, and without setting them out as a part of it or at length, the terms and provisions of the schedules of practice and charges of the American Institute and of the New York Chapter and the canons of ethics of the American Institute. There are a number of important points which the schedules of the Institute and the New York Chapter and the canons of ethics do not cover, so that as to these, the short form contract is silent, whereas they are covered by the longer form. Nevertheless, the short form has been found to serve a most useful purpose. It is immeasurably better than no contract, and it would be a captious client indeed who would take any offense at a request that he sign it. As a matter of fact, I have in some cases incorporated in it, without sacrificing its generally brief form, provisions sufficient to meet a number of the points which are not covered by the schedules of charges and practice.

Both of these contracts are printed in moderate quantities and kept in the office of the architect ready for immediate use. Wherever circumstances are

such that the fuller form may be used it is employed. Where this is not practicable, the short form is relied upon. Since these contract forms have been in use in the office of this architect, he has not once had occasion to resort to legal proceedings as between his client and himself, in any case where the contracts have been used. The contracts have been accepted by his clients as a matter of course, and the clients have, I think, been rather favorably impressed by the business-like character of the proceeding. It is needless to say that there is nothing in either contract unfair to the client. The contracts merely give definite and concrete expression to the terms upon which the parties, in fairness to each of them, should proceed, instead of having these terms to conjecture and inference, and so inviting disputes and misunderstanding.

Payment for Plans Made But Not Used

UNDER the present extraordinary post-war conditions definiteness in the preliminary understanding with the client is of unusual importance. Building costs are such at the present time that, in repeated instances, it will happen that the client will consult the architect, request him to prepare sketches, plans and specifications, and advertise for bids, and then, when the latter are received, decide that the cost is prohibitieve and abandon the purpose of letting the contract and proceeding with construction. Where this occurs, it is amazing how many clients, including men familiar with and trained in business dealings, seem to have the impression that the architect is a sort of eleemosynary institution, and that he is not entitled to any compensation for the work which he has done, inasmuch as the job has not actually been proceeded with. This is especially true in those cases where the architect has prepared preliminary sketches only and the project is then abandoned. The client assumes, apparently, that such sketches are submitted merely in the hope that they will be acceptable and that the work will then be proceeded with and that the architect is giving his time and experience to the preparation of the sketches, on the chances that by doing so he will be selected as the architect for the job when and if—especially *if*—the client decides to go ahead with it.

There is manifestly no reason why the architect should not be paid for the work which he does. irrespective of whether or not the client decides to make use of the sketches and plans and complete the building operation. No architect can afford to prepare the many sketches and layouts desired and required by optimistic clients who believe that despite prevailing building costs they will, in some way and in their particular building operations, be able to secure moderate bids, unless he is to collect the value of the work done by him in preparing them. The law recognizes that this is so and, in the absence of a formal contract, allows him to recover in such a case on the "quantum meruit" theory the reasonable value of the work done. The architect cannot afford, however, to run the risk of the expense and loss of time and good will incident to repeated misunderstandings with clients regarding payment for such preliminary work. By exercising the slight care necessary to secure a contract with the client all this difficulty will be obviated and the client will know, in the beginning, that the architect is to be paid for whatever work he does, irrespective of whether or not the work is utilized by the client thereafter and the building erected.

The high cost of building today also emphasizes, with special clearness, the necessity of avoiding any reference to an implied guarantee of cost. A little negligence on this point, under present building conditions, may result in a claim against the architect for many thousands of dollars. At a time when builders, almost without exception, are refusing to give binding estimates or make bids for work done and are insisting upon cost plus percentage contracts, it is self-evident that the architect must exercise special care to so conduct his interviews, correspondence, and dealings with the client, that there may be no ground whatsoever for any claim by the latter that the architect has assumed any obligations with respect to the cost of the building, or made any guarantee that the cost will not exceed a certain amount, or in any way assumed liability in connection with the job, other than the ordinary obligation to perform his work in good faith and with reasonable care, skill, and intelligence.

Avoid Misunderstandings of Institute Schedules

THE architect who suffers most, by reason of a failure to arrive at a preliminary and definite understanding as to the amount of his commission, is he whose regular percentage charge is larger than the minimum charges specified in the schedules of the American Institute and of the chapters of the Institute in the states in which he practices. The rates given in the schedule of the American Institute and in the schedule of the New York Chapter are *minimum* rates, and the schedules specify that they are such. Nevertheless, even a client who has heard of the American Institute and of its schedules of charges, as most clients unquestionably have not, will often assume in perfectly good faith, in the absence of a definite agreement, that a charge by the architect in excess of the charges specified in the

Institute's schedules is an excessive charge. I had occasion but recently, in the interest of a client, to interview a business man of long training and large affairs, with reference to a claim due and unpaid to my client. The architect, in submitting his charge, had made some reference to the schedule of charges of the American Institute. The business man in question, noticing this, had carefully provided himself with a copy of the schedule of the Institute and also with a copy of the schedule of the New York Chapter. As soon as our conference opened he made the point that the charge was exorbitant, in that it was in excess of the charges specified in these schedules, that the price to be paid had never been agreed upon specifically, and that for these reasons he would not pay the bill as rendered. As a matter of fact the percentage charge was entirely reasonable, and any experienced member of the profession would have recognized it as an entirely proper charge to be made by an architect of my client's standing, for work of the character involved. No amount of argument on my part could at first convince the client that the architect was not acting improperly in charging a higher rate than that specified in the Institute schedule. The fact that the schedule specifically stated that the amounts specified therein were the minimum amounts which an architect should charge, and the fact that my client was regularly receiving fees on a much higher percentage, affected him not at all. He would acknowledge, after considerable argument, that the schedule as worded did refer to a minimum charge, and within the next few moments would again assume, with a complete lack of logic albeit in entire good faith, that the schedule nevertheless did not contemplate the making of a higher charge. Finally, following repeated interviews and conferences, I succeeded in getting him to refer the matter to his counsel and it was then agreed that the charge as made would be allowed. The net result was that in securing the acknowledgment of the claim, many hours of my time and of my client's time had been taken up with interviews, arguments, correspondence and the like, and the client, I firmly believe, is convinced to this day that he was not dealt with in entire fairness. If an agreement had existed the question would never have arisen; the entirely proper charge as made would not have been questioned; the rates of the American Institute would not have been introduced into the matter or complicated the issue; the client would have been satisfied and not disgruntled, and the architect would have avoided the loss of his time and the expense which he incurred for legal services.

Portico of St. John's Chapel, Varick Street, New York

(See reproduction of the original drawings by O. R. Eggers in this issue)

NEW YORK'S growth is glacier-like in its movement. Slow, but irresistable. Whatever obstructs its progress is swept aside or over ridden. Dignified St. John's has shared the fate of many another of our venerable and venerated structures. The extension of Seventh avenue and the building of the subway has caused the passing of this church.

Another of the chapels of Trinity Parish (St. Paul's Chapel has been previously illustrated), and while not as old as St. Paul's, having been built about 1807, it was none the less a structure that all New Yorkers regarded with great respect and many with the attachment of actual association.

The master builders, which in those days was equivalent to being the architects, were T. C. Taylor, Henry Hedley, Daniel Domanick and Isaac McComb. The original location of this church was one of the most attractive in New York. It stood on the easterly side of St. John's Park whose embowered walks were a favorite recreative spot for the well-to-do residents of the neighborhood.

In the early 70's the New York Central Railroad secured this park for a downtown freight terminal. This unfortunate occurence not only changed the character of the residential section nearby, but the influence of so undesirable a location was felt for many blocks in every direction. What had been a neighborhood of aristrocratic dwellings was reduced to a slovenly purlieu of ramshackle buildings.

St. John's was deserted, and its services became those of a strictly mission chapel. At last it ceased to exist. Those who venerate the traditions of New York could calmly watch its passing. The building was too good to have sunk to so low an estate and it was better that it should be razed. The memory of its graceful spire, its resonant bells and the shade of the portico, shown in Mr. Eggers' admirable sketch are to many, a reminiscence fraught with deep satisfaction and quiet contentment.

PORTICO, ST. JOHN'S CHURCH, VARICK STREET, NEW YORK
THE AMERICAN ARCHITECT Series of Early American Architecture

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EDITORIAL

Wasting Opportunities

FIFTY years hence, the historian writing on the civic development of New York City will probably refer to Seventh Avenue as "a lost opportunity," just exactly as we now describe Times Square as an example of the failure properly to conserve our architectural resources.

With the erection of the Pennsylvania Station and the Hotel Pennsylvania, both by McKim, Mead & White, and the completion of Warren & Wetmore's Grand Central Station group, two exceedingly dignified architectural centers were established. There was a movement, unfortunately "dead aborning," to link these important terminals by a diagonal street that would be most advantageous in every way. The condemnations to effect this improvement were not prohibitive, but there lacked the necessary enthusiasm to carry it forward.

Seventh Avenue having been paved and redeemed as a traffic thoroughfare, it was hoped that the development between Times Square and the Pennsylvania Station would be of so fine a character as to make it one of the best in the city. Now it has apparently been taken over as the site for the new grouping of the garment making trades and there are in course of construction at least a dozen very important structures. It is not difficult to foresee that conditions that made lower Fifth Avenue so very undesirable and threatened with the same fate the shopping district between 42nd and 34th Streets will become permanent on Seventh Avenue.

Seventh Avenue between 42nd and 34th Streets was logically a hotel street, in the same way and for the same reasons as has secured for 42nd Street the location of our most important hotels. The few hotels now located on Seventh Avenue may soon find that conditions of street or sidewalk congestion will seriously impair the value of their location.

THE majority of the garment workers are colonized as to residence on the lower East side. The new location of the industry on the West side will create, if possible, an even worse condition of crosstown surface car traffic than unfortunately now exists.

It has never been possible to get serious consideration of the project to colonize the garment industry in the suburbs. Just the number of people engaged in this business is not accurately known to us but it is very large. It is patent to even the casual observer of present conditions that the location of this industry in the suburbs would work for the very best results. The development of a community with proper housing, more healthful working surroundings would solve several important problems. It would help New York's East Side district to a less congested condition; it would swiftly advance the Americanization of a large number of people of a certain class that seem to resist any efforts to change them from old world ways which unfit them for the best duties of citizenship and correct social habits; it would conserve the dignity of Seventh avenue, and, finally, it would lessen the force of that insidious propaganda for civic unrest that best flourishes in the purlieus of cities, the hiding places of men and women of pernicious activity.

An Efficient State Society

JUST exactly what is the value of state societies in the field of organized architecture can be learned by a careful review of the July *Monthly Bulletin*, the official publication of the Illinois State Society of Architects. Scanning the pages of this well edited publication it is found that in every phase of practice the Illinois society with watchful and efficiently directed energy is valuably functioning. In scrutinizing the examination papers for registration with a view of determining their proper value, in extending paternal and substantial aid to junior organizations, in safeguarding the ethics of practice or in taking steps to effect a pleasant and at the same time just relation between its own society and others that are allied to its field—the Illinois society is always alert. Perhaps a principal reason for this high efficiency lies in the fact that as a state society, the Illinois organization is a host unto itself.

There is no red tape of procedure in its action, no

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slowing up by delay in reporting to a board of directors for permission to act. When there's something wrong this society sets it right. There is no procrastination. Its whole course is dominated by the two essentials to produce good results—action and efficient service. There's no patent or coypright on that sort of thing. It's as free as air, every state in the Union can similarly proceed. The marvel is, why they don't do it? New York has made a fine start and will with its fast increasing membership soon take its place at the front. Michigan has long been a wide-awake state in the matter of its society. There are several other states, more or less alive.

No good reason has ever been advanced for not extending organizations of state societies to every state. When that has been accomplished, organized architecture will become an important, dignified and truly representative thing. Meanwhile, there's the example of those states now thoroughly and efficiently working to set forth an argument so absolutely correct in its premise that no one may refute it.

The War Memorial In New York

NEW YORK CITY can prevent many a flagrant artistic error by so acting as not mistakenly to proceed in the matter of the proposed war memorial. One step in the right direction is the abandonment of the Grand Union Hotel site. As stated in these columns some time ago when discussing the proposed building for that site, by no stretch of imagination could such a type of building find place on that site and be a dignified memorial. Now that the city has disposed of the land, one menace at least has been removed. But there are others equally dangerous.

A certain group of the committee strenuously urge a memorial bridge: one built to carry all the varied traffic that now makes our city streets a maelstrom and a babel of discordant noises. We need a bridge across the Hudson, and we need one badly, but past experience has shown that there is no possibility of combining a respectful memorial aspect with such a structure. Imagine converting the approaches of any of the bridges across the East river into memorials for New York and Brooklyn men. The idea cannot be seriously regarded.

"Let us calm ourselves" states an editorial in the *Times*, "with a glance across the ocean. France, which has a native instinct and an educated taste in public memorials which have never been rivaled since 'the glory that was Greece and the grandeur that was Rome,' has decided to take counsel for ten years, for fear of committing an atrocity upon her heroic dead." As everyone knows, they do these things better in France, and when they erect memorials they are such in the truest sense. They do not, as we have done in this country, proceed with ill-advised haste and create results which cause succeeding generations to feel the deepest regret.

Further, referring to the *Times* editorial, we learn that England is impetuously starting out on a path of error as great as that which now lies before us. With the Albert Memorial and the Shakespeare Memorial at Stratford as permanent "horrible examples" they are "trembling even more perilously that we are on the brink of abysmal folly." It is proposed to commemorate the great sacrifice of the British soldier by a gateway 100 feet high, with a great hall at its base and a temple on either flank, "the whole," says the *Times*, "in the style dear to Egyptian conquerors and slave drivers." And to this end, it is proposed to appropriate, and to desecrate one of the two of the finest sites in London.

What most forcibly strikes the patient, or perhaps more correctly speaking, impatient observer, is the ignoring of the existence of societies, the vary nature of whose organization absolutely qualifies them to take up, discuss and design the type of memorial we should have. We have no criticism to make as to the personnel of the present commission, as to their entire willingness to do the very best thing, but the majority is not equipped either by knowledge or training to undertake a problem of this character.

Why not give the whole thing over to the Fine-Arts Federation, receive their report and recommendations and submit it to the people for a decision? The Architectural League, the National Academy and the National Sculpture Society could bring to a discussion and determination of this important matter just the sort of ability that would insure success. Can this and similar great undertakings be spared the admixture of politics? It was by private effort that Stanford White's fine arch in Washington Square was left to mark the great work of Admiral Dewey. The great arch that the sculptors set up in Madison Square was lost in perpetuation because it became involved in a maze of local political manipulation.

France sets a good example. Better to wait a decade and do it right than, fearing the ignorant criticism of those who would rush us into some great error, take the best that is now attainable, never good, nor appropriate, and perhaps so ignorantly projected as to be absolutely disrespectful, and a constant source of regret.

Organization, Management and an Accounting System for an Architect's Office

By H. P. Van Arsdall, *of Samuel Hannaford & Sons, Architects, Cincinnati, Ohio.*

Part II

Firm Financial Records & Cost System:

This department keeps all financial records of the firm, including the cost system.

For many years the architectural profession has been endeavoring to find a system of accounting that would be applicable to their business. So far no general scheme has been devised that could be used universally. It has only been in the larger offices, where accounting systems have been installed. The writer knows from experience that the lack of an accounting system has proven very painful to certain architects. It is the common belief that the installation of an accounting system requires a large expenditure of money and the employing of additional help. This is true to a degree. The financial books, as outlined and shown in this article, cost approximately $150, including ten thousand time cards. It is necessary, however, to spend more time on this system than on the old method of keeping books on the receipt and disbursement basis, but additional help is not required.

The financial records are designed for "double entry" and are kept on the so-called "accrual system." At the end of an accounting period (month) accrued wages, expenses, etc., are shown as liabilities, while fees earned but uncollected are shown as assets.

Deferred charges, such as prepaid insurance, are shown as assets and are extinguished by charging to an expense account the monthly proportion of the total amount. This procedure is necessary to show a true statement of affairs.

After all adjustments and entries from the journal to the ledger have been made a "trial balance" is taken from the ledger to prove the completeness of entry.

The cost system is planned so as to distribute overhead expense on the "Man-Hour Plan." Under this scheme no account is taken of the difference in rate of wages. It is assumed that every employee in a general way requires the same amount of supervision, light, heat, space, insurance, drinking water, toilet facilities, etc.

All time is divided into "Productive" and "Non-productive" hours. Productive time is spent directly producing some particular job. Non-productive time is spent on work not chargeable to any particular job.

Since overhead expense is a vital part of production costs it becomes necessary to distribute it in the proper proportion to the various jobs benefited.

To determine the amount chargeable to each job the rate (per productive hour) is found by dividing the total number of productive hours worked in the office during the month into the total overhead for the same period.

The total overhead is distributed each month.

The following model classification of accounts may be used for a small or large office. It can be extended or contracted in order to meet individual needs.

Classification of Accounts.

1. *Assets.*
   - 11. Fixed Assets.
     - 111. Office Furniture and Fixtures.
     - 112. Books.
     - 113.
     - 114.
     - 115.
   - 12. Current Assets.
     - 121. Imprest Fund.
     - 122. Cash in Bank.
     - 123. Accounts Receivable (Controlling).
       - A
       - B
       - C
     - 124. Sundry Debtors (Controlling).
       - A
       - B
       - C
     - 125. Investment (Bonds).
     - 126. Materials and Supplies on hand.
     - 1261. Printing and Stationery Materials.
     - 1262. Drawing Materials.
     - 127.
     - 128.
     - 129.
   - 13. Prepaid Accounts.
     - 131. Prepaid Insurance.
     - 132. Advances.
   - 14. Working.
     - 141. Work in Process (Controlling).
     - 142.
     - 143.

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15. Expenses.
  151. Draughting Room Salaries (To be Distributed).
  152. Engineering Expense (To be Distributed).
  153. Superintendents' Salaries (To be Distributed).
  154. Undistributed Expense (Overhead).
  (Accounts 151, 152, 153 and 154 are all controlling accounts).
    1541. Non-chargeable time of principal.
    1542. Non-chargeable time of Draughtsmen.
    1543. Non-chargeable time of Engineers
    1544. Non-chargeable time of Superintendent.
    1545. Overtime allowance.
    1546. Lost time, vacations, etc.
    1547. Office Salaries (Controlling).
      A
      B
      C
    1548. Rent.
    1549. Printing and Stationery.
    1550. Drawing Material.
    1551. Telephone and Telegraph.
    1552. Membership and Dues.
    1553. Donations.
    1554. Light.
    1555. Insurance.
    1556. Traveling.
    1557. Periodicals.
    1558. Legal and Accounting.
    1559. Taxes.
    1560. Depreciation of Equipment.
    1561. Bad Debts.
    1562. Miscellaneous Office.
    1563. Variations in Undistributed Expense.

2. *Liabilities.*
  21. Fixed Liabilities.
  22. Current Liabilities.
    221. Accounts Payable.
    222. Notes Payable (Loans).
    223. Salaries Payable.
    224. Sundry Creditors (Controlling).
    225. Variations in Undistributed Expense.
    226. Reserve for Depreciation.
    227. Reserve for Bad Debts.
    228. Accrued Expenses.
    229. Reserve for Lost Time, Vacations, etc.

3. *Proprietary Interest.*
  31. Capital Investment (Controlling).
    A
    B
  32. Surplus.
  33. Profit and Loss.

4. *Operation Profit and Loss.*
  41. Cost of Completed Work (Controlling).
    A
    B
    C
  42. Fees.

5. *Incidental Profit and Loss.*
  51. Incidental Income.
  52. Incidental Expense.
    521. Interest.
    522.

In order to more fully explain the working of this system the writer feels that it is necessary to state the nature and purpose of all accounts under the classification.

1. *Assets.* — Assets Accounts represent values owned.
  11. Fixed Assets.—Fixed Assets are properties owned that are necessary in the operation of the business. These assets, of course, are not to be sold. The subsidiary accounts under Fixed Assets are:
    111. Office Furniture and Fixtures.
    112. Books.

To these accounts is charged all new equipment and books that are purchased and have a life beyond one year's time. These accounts should be depreciated quarterly and the depreciation figured on a 10 per cent. annual basis. At no time should you reduce the original book value, but on the balance sheet deduct the allowance for depreciation in order that the original value will not be disturbed until it is completely wiped out.

  12. Current Assets.—Current Assets represent values owned that are constantly changing in value. The following accounts come under Current Assets.
    121. Imprest Fund.

At the beginning of operation this account is debited with a certain sum (say, $25) and cash credited. This sum is placed in the cash box and is used for paying small current bills When the fund is nearly consumed a check is drawn for the amount of bills paid during the period, restoring the fund to its original amount, and the various bills are charged to their proper accounts.

    122. Cash in Bank.

Cash in Bank should represent at all times the amount of cash owned (not including Imprest Fund). All cash receipts should be deposited in the Bank intact and all disbursements made by check.

    123. Accounts Receivable.

This is a controlling account and receives only the monthly totals from the Journal. The subsidiary accounts controlled by Accounts Receivable represents all moneys owing by

clients. When these accounts are debited with fees Account No. 42 should be credited.

Advances paid out for clients in the way of Building and Water permits, etc., are to be charged direct to client's account and cash credited.

124. Sundry Debtors.

This is a controlling account. The accounts that are controlled are the drawing accounts of firm members and other accounts of this nature.

125. Investments.

This account shows at all times any Bonds, Stock, etc., owned by the firm. It is credited when the Stocks, Bonds, etc., are sold.

126. Materials and Supplies on Hand.

This account is charged with all materials and supplies purchased and is credited monthly with all supplies used. The corresponding charge is made to one of the various expense accounts.

13. Prepaid Accounts.—The subsidiary accounts are such items as:

131. Prepaid Insurance.

This account is charged with all insurance premiums paid during the year and credited monthly with 1/12 of the total, and the corresponding charge is made to Account 1555.

14. Working Assets.—This account represents the work passing through the office. The subsidiary account is:

141. Work in Process.

To it is charged all Draughting Room expense, Engineering and Superintendents' time, and the total of the undisturbed (overhead) expense. This is taken from the Time Distribution Sheet and Overhead Distribution monthly. When work is completed this account is credited and cost of completed work debited.

15. Expenses.—The subsidiary accounts are:

151. Draughting Room Salaries Account.

This account is charged with all Draughting Room salaries, and at the end of the month is credited, and the amounts debited to proper jobs in Work in Process.

152. Engineering Expense.

This is treated the same as Account 151.

153. Superintendents' Salaries.

This is treated the same as Account 151.

154. Undistributed Expense.

This account controls the following subsidiary accounts:

1541. Non-chargeable Time of Principal.

All time of firm members not actually chargeable to jobs is debited to this account.

1542. Non-chargeable Time of Draughtsmen.

1543. Non-chargeable Time of Engineers.

1544. Non-chargeable Time of Superintendent.

These three accounts are treated the same as Account 1541.

1545. Overtime Allowance.

To this is charged any increased rate of pay that is paid to draughtsmen on account of overtime work. It is not just that any particular job should be burdened with this expense on account of it having been the particular job to rush through the office.

1546. Lost Time, Vacations, etc. (Draughtsmen, Engineers and Superintendents.)

This account is debited monthly with 1/12 of the annual amount set up in Reserve Account (229). A reserve account for Lost Time, Vacations, etc., will be set up, and the accrued expense shown as a credit each month and the same amount should be debited to this account.

When the actual money is paid out for the lost time, cash is credited, and the Reserve Account debited.

1547. Office Salaries.

Firm members are paid salaries the same as others in the office. The executive's salary is charged to overhead expense, and the other members are classed as draughtsmen or superintendents, as the case may be.

This account is charged with the salaries of the principal, the office business manager, stenographer and office boy.

1548. Rent.

This is paid monthly and is charged as a regular monthly expense. Credit cash and debit rent when it is paid.

1549. Printing and Stationery.

Charge this account each month with the amount of materials used and credit Account 1261.

1550. Drawing Material.

Treat same as Account 1549.

1551. Telephone and Telegraph.

Treat same as Account 1548.

1552. Membership and Dues.

This account is charged with all dues, membership fees, etc. If any one month should be overly burdened then a prepaid account should be set up and the expense distributed over the twelve months.

1553. Donations.

Treat same as Account 1548.

1554. Light.

Treat same as Account 1548.

1555. Insurance.

This account is charged monthly with 1/12 of the total annual prepaid insurance, and credit is made to Prepaid Insurance Account.

1556. Traveling.

Debit this account with all traveling expenses when it is not directly chargeable to a job.

1557. Periodicals.

Debit with all magazines, papers, etc.

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1558. Legal and Accounting.
Charge with all attorney and accountant fees.
1559. Taxes.
An architect's taxes are usually small and it is not necessary to distribute the sum over the entire year. When taxes are paid, debit this account and credit cash.
1560. Depreciation of Equipment.
Debit this account montly with 1/12 of depreciation charge and credit the Reserve Account.
1561. Bad Debts.
Handle same as Account 1560.
1562. Miscellaneous, Office.
Expenses of all other kinds are charged to this account (small).
1563. Variations in Undistributed Expense.
Where there is a balance in Account 225 it is charged out the next month and debited to this account.

2. *Liabilities.*—Liabilities are all values owed.
21. Fixed Liabilities.—Liabilities of a fixed nature only are credited to this account. Ordinarily, an architect has no fixed Liabilities, unless they have issued bonds or stocks.
22. Current Liabilities.—These are Liabilities that are alive and are constantly changing in value. This is a controlling account and has the following subsidiary accounts.
221. Accounts Payable.
All accounts due and payable are credited to this account.
222. Notes Payable.
Treat same as account 221.
223. Salaries Payable.
This account will be credited at time of closing books or when the end of the month falls in the middle of the week, with all accrued salaries up to date. When salaries are paid cash is credited and this account debited.
224. Sundry Creditors.
This account will be credited with all items not included under Accounts Payable.
225. Variations and Undistributed Expense.
Any balance at end of period remaining in Account 154 is absorbed by this Account.
226. Reserve for Depreciation.
This account is credited monthly with the regular amounts of depreciation fixed upon.
227. Reserve for Bad Debts.
This account is credited monthly with the approximate or estimated allowance for bad debts.
228. Accrued Expenses.
At the end of any accounting period any expenses not as yet paid, but accrued, are credited to this account.
229. Reserve for Lost Time, Vacations, etc.
This account is credited monthly with 1112 of the annual estimated lost time, etc., and the corresponding debit made to Account No. 1546.

3. *Proprietary Interest.*—This account represents the net worth of the business. The subsidiary accounts are as follows:
31. Capital Investment.—This is a controlling account and shows the original investment at start of business and represents the amounts paid in by the firm members.
32. Surplus.—All profit or loss at end of year is debited or credited to this account, as the case may be. Any dividends paid are debited to this account.
33. Profit and Loss.—All trading or operating accounts are closed into this account at the closing period, or once a year.

4. *Operation—Profit and Loss.*—Accounts Nos. 41 and 42 are closed into this account at end of accounting period.
41. Cost of Completed Work.—This account is a controlling account and controls all jobs that have been completed. These are listed in alphabetical order and on the completion of any job, Work in Process is credited and this account debited.
42. Fees.—When Accounts Receivable is debited with a fee this account is credited.

5. *Incidental Profit and Loss.*—Accounts No. 51 and No. 52 are closed into this account at the end of accounting period.
51. Incidental Income.—This account records any earnings received outside of the regular order of business, such as money paid for renting a portion of the office to an outside person.
52. Incidental Expense.—This is a controlling account and has the following subsidiary accounts:
521. Interest.
This account is debited with any interest paid out. Interest cannot be charged as an Overhead expense.

ORIGINAL ENTRIES:

In opening the books a Balance Sheet is prepared, listing in detail Assets, Liabilities and Capital. These items are then entered in the Journal, and from the Journal posted to the Ledger.

OPERATION OF SYSTEM:

The forms presented for the operation of the system are handled in the following manner:

The Daily Time Card (Form No. 7) is arranged in half-hour divisions and it is a simple matter for a draughtsman to indicate on the card just what particular work is performed during the day. A white card is used for productive work and a blue card for non-productive work. It is not necessary, but advisable, that a separate card be used for each job worked on during the day, since this permits of

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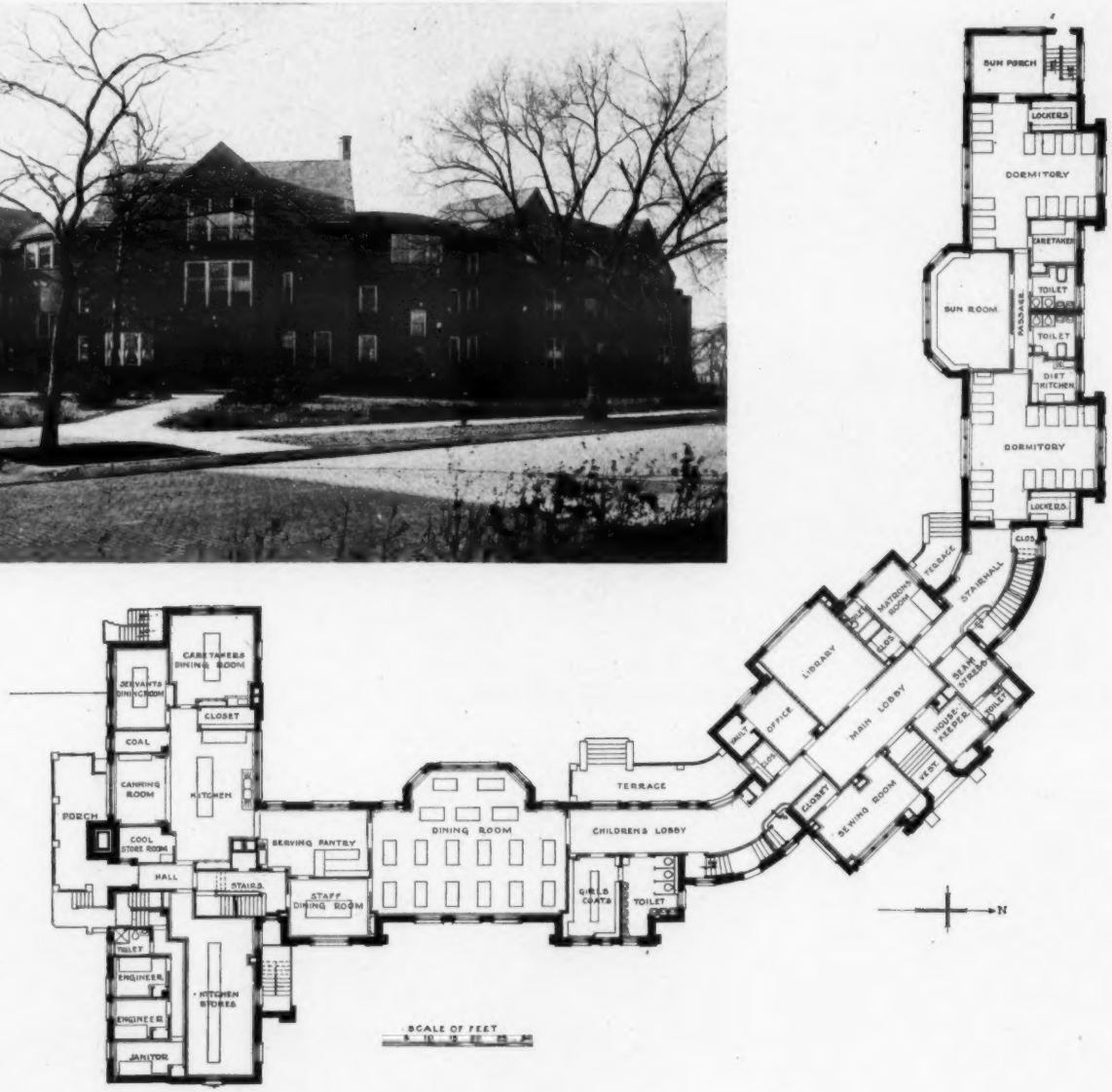
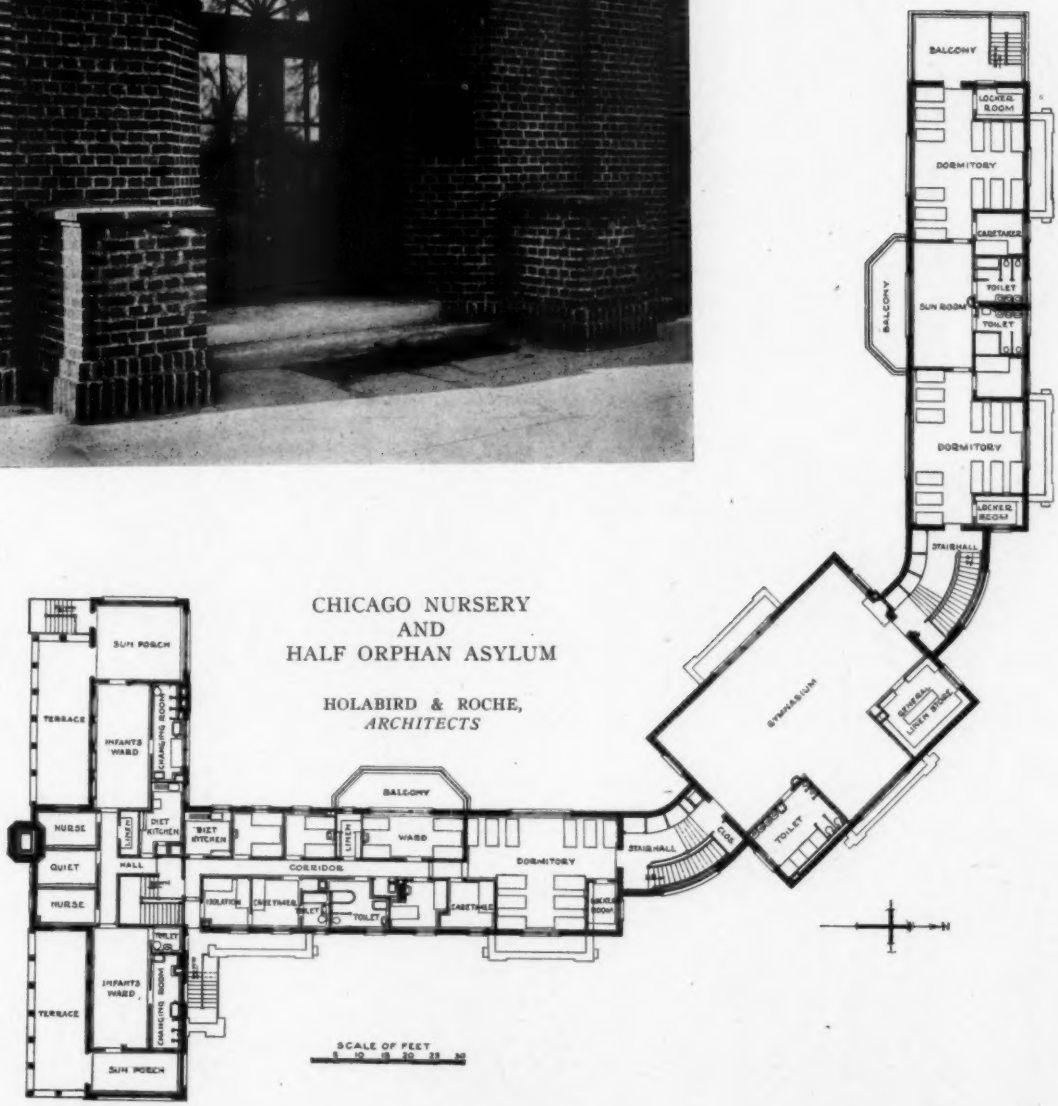


VIEW FROM NORTHEAST AND FIRST FLOOR PLAN, CHICAGO NURSERY AND HALF ORPHAN ASYLUM

HOLABIRD & ROCHE, *ARCHITECTS*

DETAIL OF MAIN ENTRANCE
AND
SECOND FLOOR PLAN



CHICAGO NURSERY
AND
HALF ORPHAN ASYLUM

HOLABIRD & ROCHE,
ARCHITECTS

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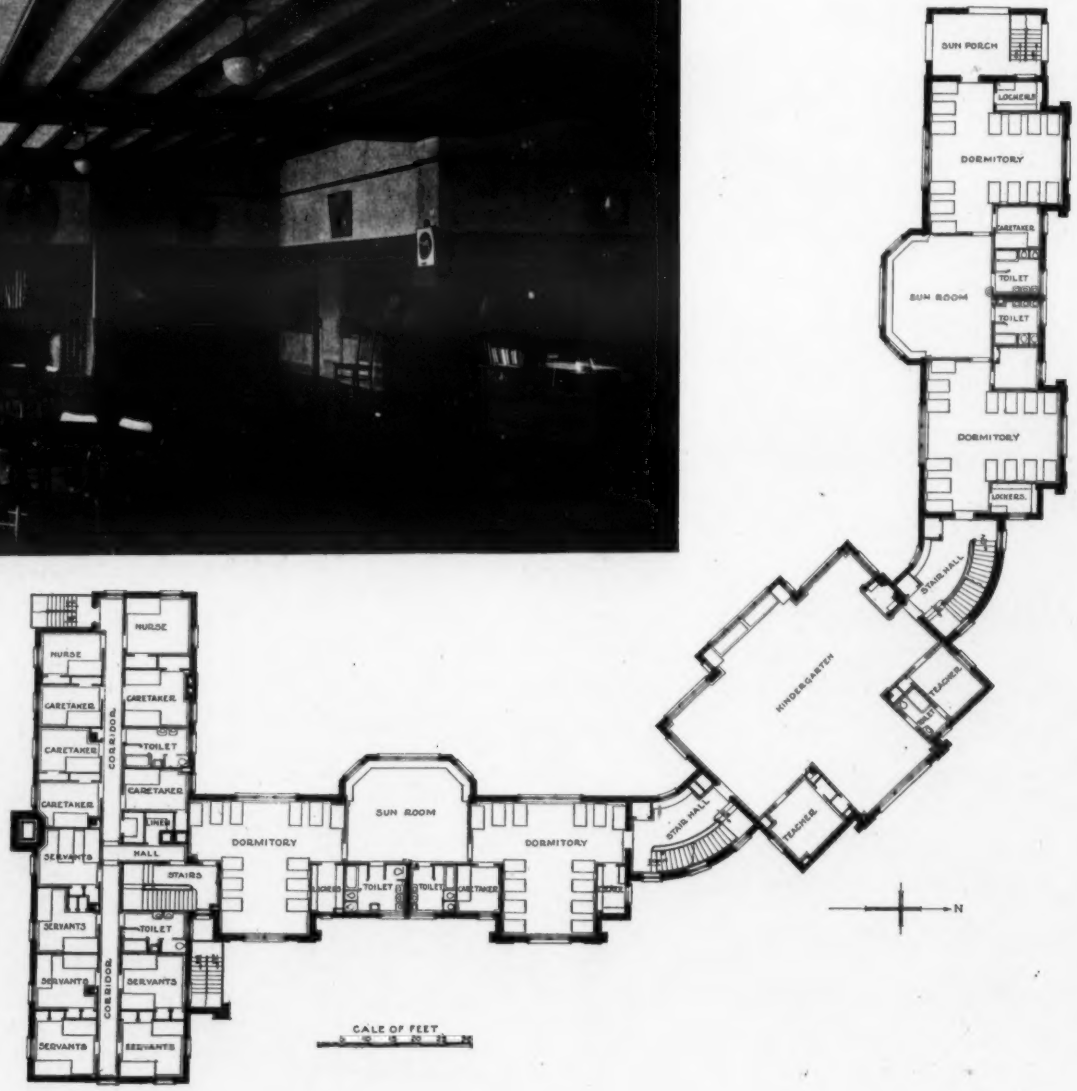
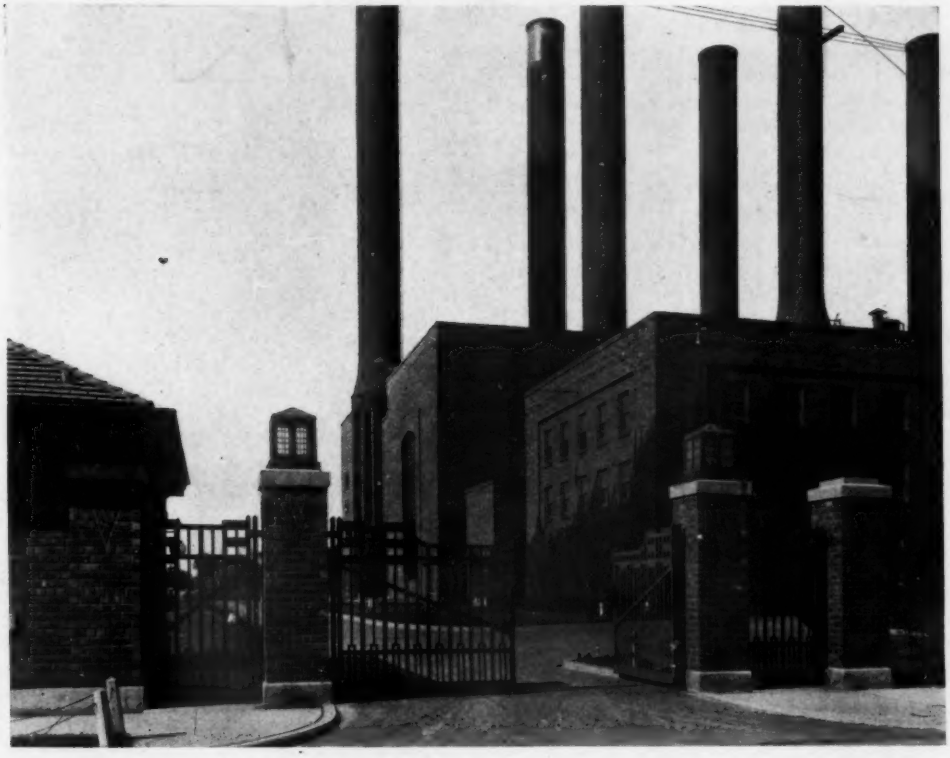


VIEW OF KINDERGARTEN AND
THIRD FLOOR PLAN
CHICAGO NURSERY
AND
HALF ORPHAN ASYLUM

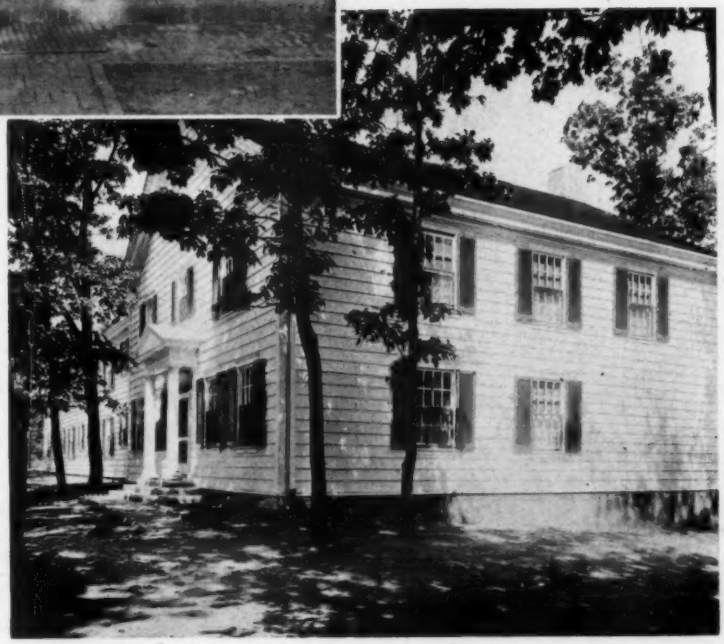
HOLABIRD & ROCHE,
ARCHITECTS



NORTHWEST STATION, COMMONWEALTH EDISON COMPANY, CHICAGO
HOLABIRD & ROCHE, *ARCHITECTS*

MARGARET MACKIN HALL,
CHICAGO TELEPHONE COMPANY, CHICAGO, ILLINOIS

(See text for other illustrations)



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FRANKLIN EXCHANGE, CHICAGO TELEPHONE COMPANY
HOLABIRD & ROCHE, *ARCHITECTS*

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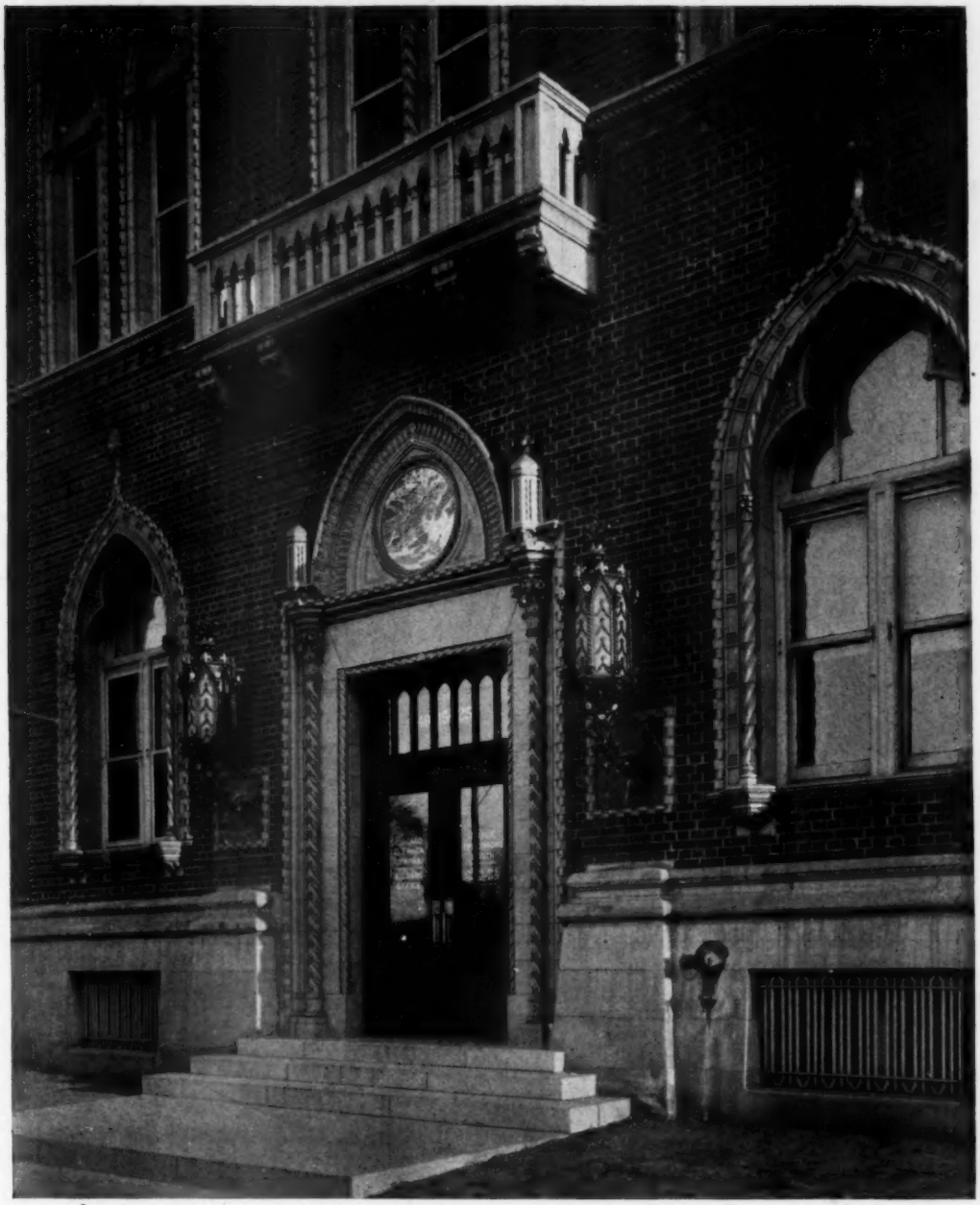
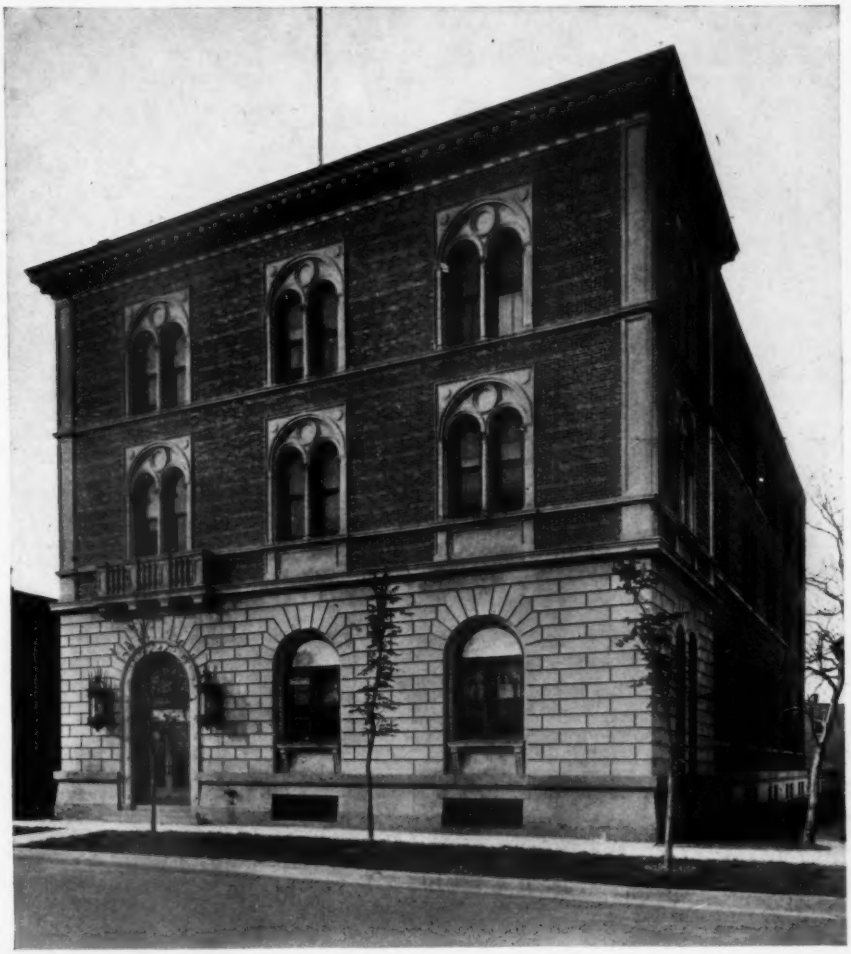
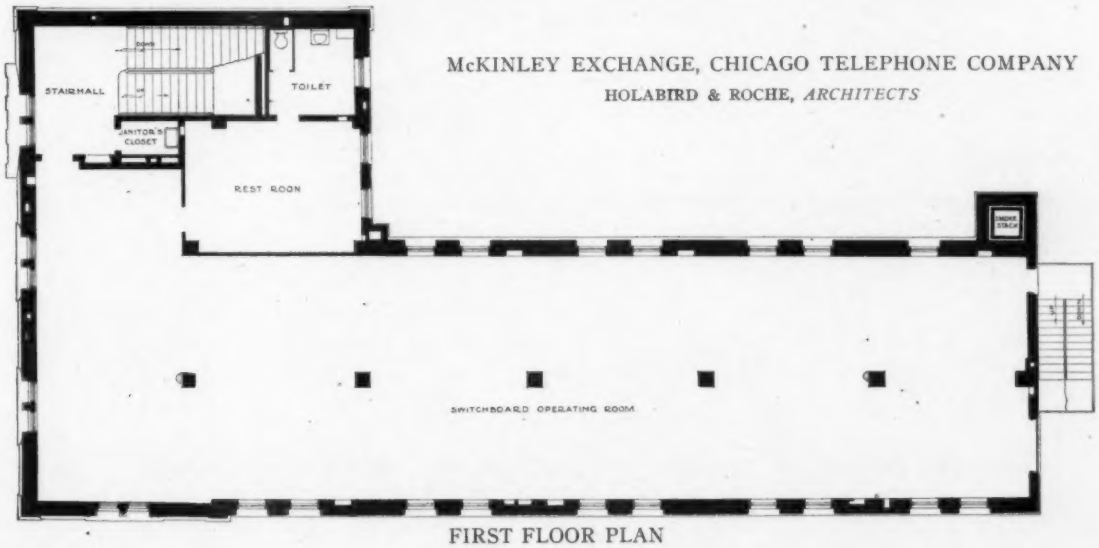


DETAIL OF MAIN ENTRANCE
KILDARE EXCHANGE, CHICAGO TELEPHONE COMPANY
HOLABIRD & ROCHE, *ARCHITECTS*
(See text for other illustration)

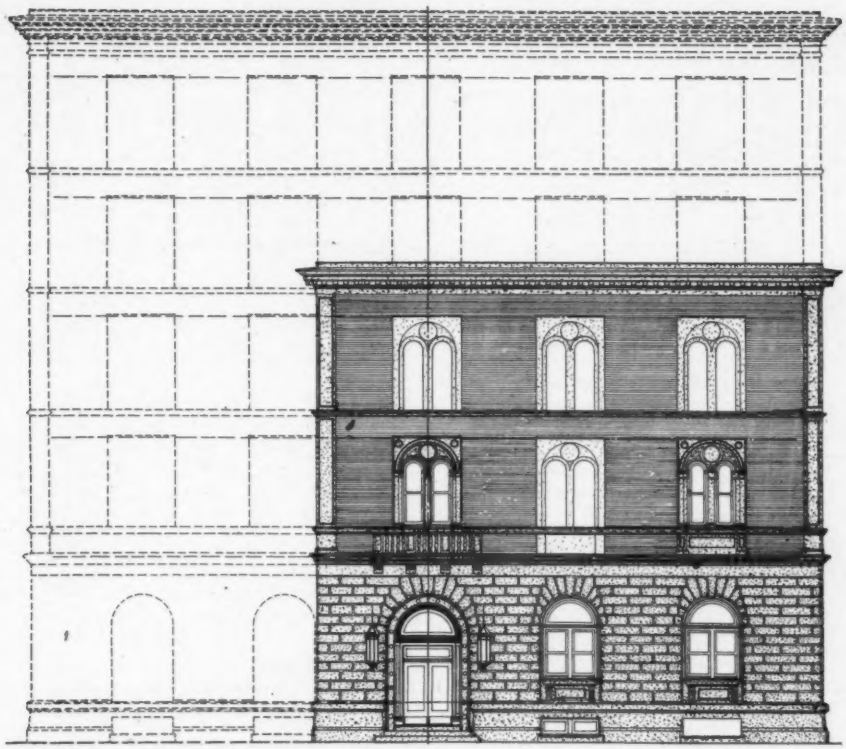


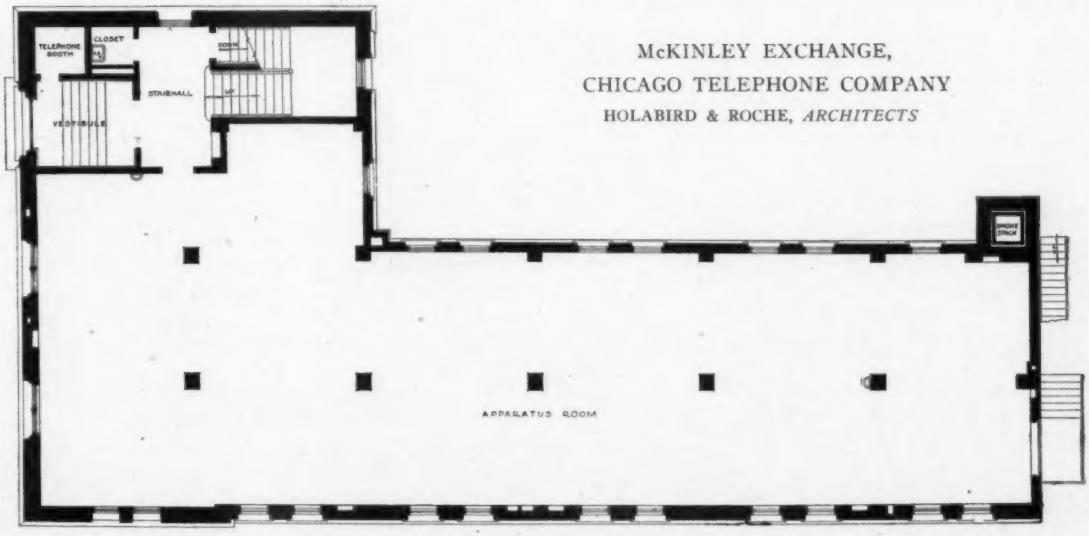


McKINLEY EXCHANGE, CHICAGO TELEPHONE COMPANY
HOLABIRD & ROCHE, *ARCHITECTS*

FIRST FLOOR PLAN

XUM



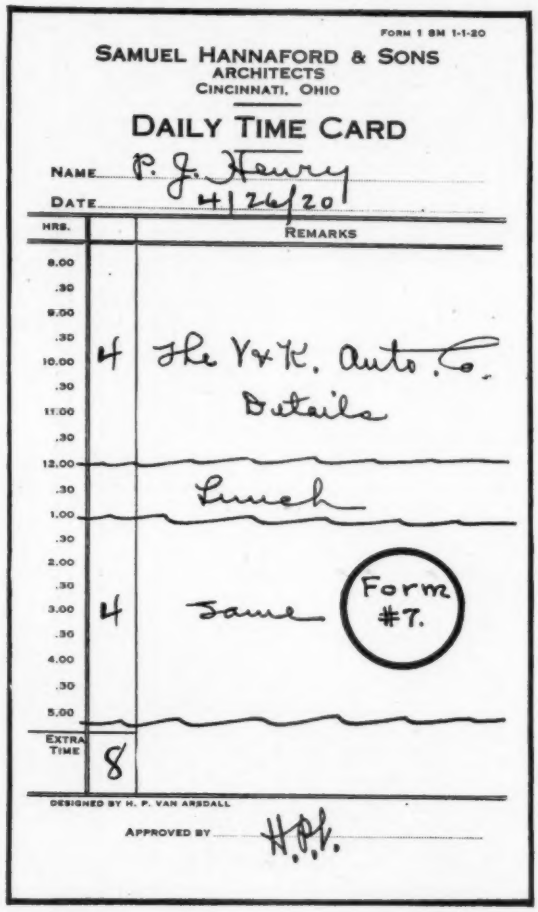


McKINLEY EXCHANGE,
CHICAGO TELEPHONE COMPANY
HOLABIRD & ROCHE, *ARCHITECTS*

SECOND FLOOR PLAN

the filing of all cards together that show time for one job. Cards are gathered up daily and are entered on the monthly individual time summaries (Form No. 8).

On Form No. 8 time for the various jobs that have been worked on during the month is listed in the columns indicated. Also, all the time that is non-chargeable to jobs listed, and at the end of the



FORM 1 SM 1-1-20

SAMUEL HANNAFORD & SONS
ARCHITECTS
CINCINNATI, OHIO

DAILY TIME CARD

NAME P. J. Henry
DATE 4/26/20

HRS.		REMARKS
8.00		
.30		
9.00		
.30		
10.00	4	The V & K. Auto. Co. Details
.30		
11.00		
.30		
12.00		
.30		Lunch
1.00		
.30		
2.00		
.30		
3.00	4	Same — Form #7.
.30		
4.00		
.30		
5.00		
EXTRA TIME	8	

DESIGNED BY H. P. VAN ARSDALL

APPROVED BY H.P.V.

month the total hours for each job is inserted in the "Total Hours" column, and the adjoining Amount Column contains the cost in dollars.

The monthly time summary for each employee is then taken and distributed on the Time Distribution sheet (Form No. 9) to the proper jobs. You will note there is a space for each employee's account number. (The account number is used instead of writing out the name), and just below it, in the corresponding column, is the total time, in dollars, for the month opposite its particular job. The horizontal extension of this time is placed in draughting, engineering and superintending, or non-chargeable time space, as provided. These totals are then debited to Work in Process and Undistributed Expense, respectively.

At the bottom of the Time Distribution sheet the totals of the individual columns under employees' names are credited to the individual salaries accounts. This is done on account of charging the regular pay roll to Salary Accounts in the ledger. It then becomes necessary to credit these accounts and place salaries in Work in Process. The reason for this is to have a record showing all salaries paid. You then enter on the journal (Form No. 10) the charges to Work in Process and charges to non-chargeable time and credit the individual salary accounts.

You are now ready to distribute the Overhead Expense (Form No. 9). Since the man-hour basis for distribution is being used we enter productive time opposite the various jobs in the columns for the various employees and carry the total horizontally over its proper space on the right-hand side of the sheet. Since we know the total productive man-hours for the month, and the overhead for the month, the rate can be found by dividing the total man-hours into the total overhead.

When the rate has been determined, this figure is used for arriving at the overhead for each particular job during the month. Entries are then made to the journal and the various jobs charged. The total of the overhead column is then credited to Undistributed Expense, which places all of the time and overhead during the month in the proper Work in Process account.

In designing the Journal it was thought best to use one book instead of having separate journals for cash receipts, cash disbursements and so on.

You will note that all accounts that are used frequently have been allotted special columns. Those that are infrequently used will be handled through the Other Accounts column and be designated by their proper numbers. The necessary columns have been provided for work in process and a single column for Cost of Completed Work.

The other forms, No. 11 and No. 12, are self-explanatory and need no discussion.

The forms shown are bound in books and filed as follows:

Form No. 7, the Daily Time Cards, are filed in medium weight envelopes, 5 by 7¼ inches. These are placed in the ordinary standard alphabetical wood file case.

Form No. 8 are kept in a loose leaf binder 9 by 11½ inches.

Samuel Hannaford & Sons, Architects, Cincinnati, Ohio.

Form 23

Time Distribution

for Month of April 1920

Sheet No. 4
Entered in Journal Fol. 27 Line. 7

Account or Job Name.	Employee's Name (Shown by Account Number in black below). 1511	1512	1513	1514	1515	1516	1517	1518	1539	Totals Debited to Work in Process: Drawing	Engineering	Superintending	Running Time	Total Debit	Total Debit
	Amounts.														
The Van Dyke Co. #1			4 26						13 60	17 86				17 86	✓
Do #2	75 47	17 78				147 22			43 70	284 17				284 17	✓
The V & K. Auto Co.	28 98		29							57 98				57 98	✓
B. of E. - C. Hill School	39 98	187 34			169 24		2 54 46	168 90		767 92				767 92	✓
The State Oil Co. #1	10 82		24 37							35 19				35 19	✓
Saint X - Church	18 07									18 07				18 07	✓
Middleton Hospital		4 98								4 98				4 98	✓
Presbyterian Hospital Inc. A			7 94				1 24		8 89	18 07				18 07	✓
King Art Co.			9 33							9 33				9 33	✓
Sunil Block						1 11				1 11				1 11	✓
Lib. Fabint									19 55			19 55		19 55	✓
The Avondale Co.									81 78			81 78		81 78	✓
Hite Cornice Co.									5 00			5 -		5 00	✓
H. J. Williams									38 22			38 22		38 22	✓
Hall Masonic Lodge									17 78			17 78		17 78	✓
The State Oil Co. #2	3 19									3 19				3 19	✓
Springfield Hospital	7 44									7 44				7 44	✓
Ridge Mission			2 33							2 33				2 33	✓
Office Time	164 77		39 20	45 53	4 98	5 01							279 19	279 19	✓
Part Time Meet. Etc.	17 -	14 22											31 22	31 22	✓
Totals Credited to Individual Salary Accts.	375 44	174 23	91 47	45 53	174 22	173 36	2 54 70	168 90	174 22	1174 6 23	10 -	117 22	310 41	1753 92	✓

Man-Hours % Distribution of Overhead Expense. for Month of April 1920

Productive Hours 1312 1/2
Non-Productive Hours 391 1/2
Total Hours → 1704

Total Man-Hours 1312 1/2
Rate
Total Overhead $1384.51

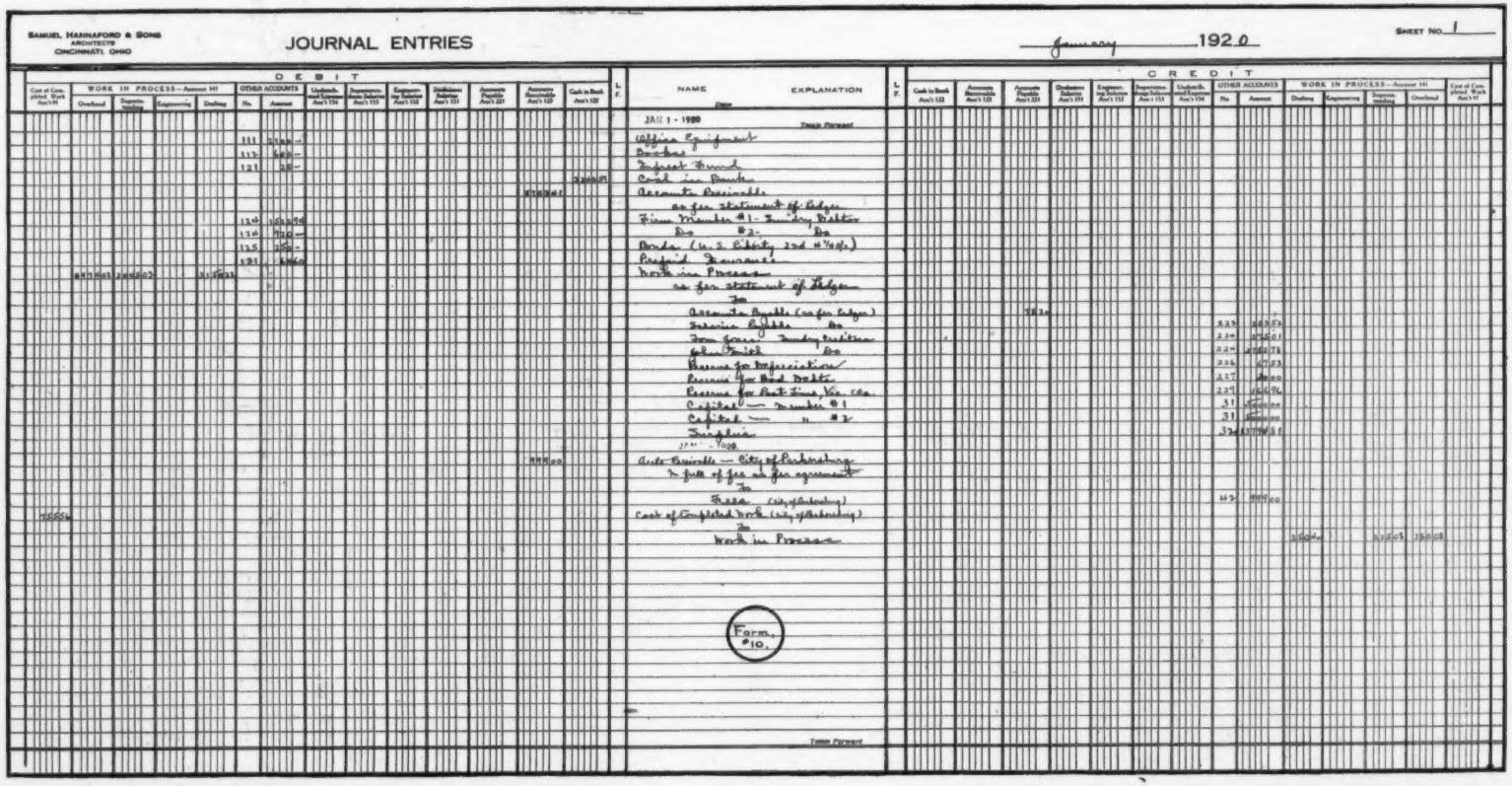
Debit Jobs with Overhead.	Man - Hours.									Total Man-Hours.	× Rate	= Total Overhead	
The Van Dyke Co. #1			18					12		25	× 1.06	26 50	✓
Do #2	35½	20				150½		38		243½	×	257 20	✓
The V & K. Auto Co.	27½		½							28	×	29 68	✓
B. of E. - C. Hill School	27½	154½			190½		195	126		693 1/2	×	731 64	✓
The State Oil Co. #1	6½		56½							63	×	66 44	✓
Saint X - Church	8½									8 1/2	×	9 03	✓
Middleton Hospital		5½								5 1/2	×	5 83	✓
Presbyterian Hospital Inc. A			17				1	10		28	×	29 68	✓
King Art Co.			20							20	×	21 20	✓
Sunil Block						1				1	×	1 06	✓
Lib. Fabint								22		22	×	23 32	✓
The Avondale Co.								92		92	×	97 06	✓
Hite Cornice Co.								9		9	×	9 54	✓
H. J. Williams								43		43	×	45 58	✓
Hall Masonic Lodge								20		20	×	21 20	✓
The State Oil Co. #2	1½									1 1/2	×	1 59	✓
Springfield Hospital	3½									3 1/2	×	3 71	✓
Ridge Mission			5							5	×	5 30	✓
Totals	110½	180	117	0	190½	151½	196	176	196	Total → 1312 1/2			

Credit Undistributed Account with Total Overhead 1384 51 ✓

Form #9.

H. Van Avondale. 12-10-1919

FORM NO. 9



SAMUEL HANNAFORD & SONS
ARCHITECTS
CINCINNATI, OHIO

JOURNAL ENTRIES

January 1920

SHEET NO. 1

DEBIT

Cost of Completed Work Acct # 141	WORK IN PROCESS — Account 141 Overhead	Supervision Salaries	Engineering	Drafting	OTHER ACCOUNTS No.	Amount	Dividends and Interest Acct # 154	Depreciation Sinking Funds Acct # 153	Engineering Salaries Acct # 152	Dividends Declared Acct # 151	Accounts Payable Acct # 221	Accounts Receivable Acct # 122	Cash in Bank Acct # 122
					111	[illegible]							
					112	[illegible]							
					121	[illegible]							
													[illegible]
												[illegible]	
					134	163 [illegible]							
					136	700 —							
					135	450 —							
					191	6860							
	847 [illegible]	2 [illegible]		31 [illegible]									
												[illegible]	

SAMUEL HANNAFORD & SONS
ARCHITECTS
CINCINNATI, OHIO

MONTHLY TIME SUMMARY TO DISTRIBUTION SHEET

April 1 to 30 19 20 — SHEET NO. 3

EMPLOYEE P. J. Henry - Draftsman — ACCT NO. 151-3 — RATE 46 3/4¢ — PRODUCTIVE HOURS 112 — AMOUNT 52.37

DAY OF MONTH: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

CHARGE TO JOB	TOTAL HOURS	AMOUNT	✓
The V & K. Auto Co.	½	.24	✓
The Van Dyke Co. #1	13	6.06	✓
Presbyterian Hospital (Ward A)	17	7.94	✓
The State Oil Co. #1	56½	26.37	✓
King Art Co.	20	9.33	✓
Ridge Mission	5	2.33	✓
Total Chargeable to Clients	112	52.27	✓
(NON-CHARGEABLE TIME) Office Time	84	39.20	✓
Overtime Allowance			
Lost Time—Vacations, etc.			
Total Non-Chargeable Time	84	39.20	✓
Totals		91.47	✓

Form #8.

FORM NO. 8

Form No. 9, Time Distribution Sheet, may be folded and kept in any available file, where they are safe from fire.

Form No. 11, Job Cost Sheet, and Form No. 12, Ledger Page, compose one book, and are bound in a single binder. This binder is loose leaf, size 8 by 11½ inches.

Form No. 10, Journal, is a regular bound book, size 14¼ by 15½ inches.

The measurements given are the over all dimensions of the binders containing the pages.

FINANCIAL STATEMENTS:

The completion of an accounting period is signalized by the preparation of a Balance Sheet and a Profit and Loss Statement.

The Balance Sheet is a complete statement of assets, liabilities, capital and surplus at time of closing books.

The Profit and Loss Statement shows how profits were gained and losses were made. It pictures the actual operation of the business.

The following model statements in a general way show how they are prepared:

MODEL BALANCE SHEET OF DECEMBER 31, 1919.

ASSETS.		LIABILITIES.	
Fixed Assets:		*Current Liabilities:*	
Office Equipment ..	$2,100.00	Accounts Payable..	$78.20
Books	600.00	Salaries Payable...	253.52
Current Assets:		*Sundry Creditors:*	
Imprest Fund	25.00	Tom Jones	275.01
Cash in Bank	3,243.59	John Smith.....	2,782.78
Accounts Receivable	8,753.41		
Sundry Debtors:		*Reserves:*	
Firm Member No. 1	1,522.94	Reserve for Depreciaiton	67.53
Firm Member No. 2	720.00	Reserve for Bad Debts	30.00
		Reserve for Lost Time, etc.	166.96
Investments:		*Capital:*	
Bonds	250.00	Firm Member No. 1	5,000.00
Deferred Assets:		Firm Member No. 2	5,000.00
Prepaid Insurance .	64.60		
Working:		*Surplus:*	
Work in Process...	10,169.27	Undivided Profits ..	13,794.81
Balancing Total..	$27,448.81	Balancing Total..	$27,448.81

SHEET No. 1 — ACCOUNT No. V-141

JOB COST SHEET — NAME The V v K. Auto Company — ADDRESS #116 Pine St. Cincinnati, Ohio

DATE 1920	ITEM	HOURS	DRAFTING	ENGINEERING	SUPERINTENDING	OVERHEAD	TOTAL DEBIT	TOTAL CREDIT	✓
Jan 31	From Dist. Sheet #1	63	44 31			68 14	111 45		
	To a/c #1							111 45	✓
Feb 6	From Journal				7 5 -		7 5 -		
28	" Dist. Sheet #2	40	41 52			43 20	84 72		
Mar 3	From Journal				7 5 -		7 5 -		
8	To a/c #1							234 72	✓
31	From Dist. Sheet #3	21	42 89			22 76	65 65		
	From Journal				7 5 -		7 5 -		
	To a/c #1							140 65	✓
Apr 30	From Journal				7 5 -		7 5 -		
	From Dist. Sheet #4	28	58 69			29 68	88 37		

Form #11.

MODEL STATEMENT OF PROFIT AND LOSS
JAN. 1 TO DEC. 31, 1919.

OPERATION PROFIT AND LOSS.

Fees earned during year		$48,771.91
Work in process Jan. 1, 1919	$8,468.20	
Work Put in Process During Year:		
Drafting	$13,660.56	
Superintending	4,553.52	
Overhead	18,214.09	
	36,428.17	
	$44,896.37	
Less work in process Dec. 31, 1919	$10,169.27	
Cost of completed work		34,727.10
Operation profit		$14,044.81

INCIDENTAL PROFIT AND LOSS.

Incidental income	$50.00	
Less incidental expense	300.00	
Less incidental loss		250.00
Net profit for year		$13,794.81

The writer is deeply indebted to Samuel Hannaford & Sons, architects, Cincinnati, Ohio, for the use of the various printed forms illustrated herein.

If those who have managed to wade through this dry and somewhat tedious article have found any suggestions that prove valuable in furthering the interests of their business, the writer will feel well repaid for the effort and study devoted to this subject.

SHEET NO. 3 — V-123

CREDIT LIMIT — NAME V v K. Auto Company

RATING — ADDRESS #116 Pine St. Cincinnati, Ohio.

BUSINESS

DATE 1919	ITEMS	FOL.	✓	DEBITS	CREDITS	BALANCE
Apr 5	6 o/c on Cost for plans, specifications and superintending of factory building. (Contract)					
July 21	Permits - Building + Water	16		66 -		66 -
Dec 31	Due on Contract to Date	48		1829 16		1895 16
	By Cash	50			1766 -	129 16
1920 Jan 23	Do	58			129 16	- 0 -
31	Due on Contract to Date	61		52 69		52 69
Feb 25	By Cash	72			52 69	- 0 -
Mar 31	Due on Contract to Date	81		7 45 2		7 45 2
Apr 17	By Cash	87			7 45 2	- 0 -

Form #12.

XUM

Current News

Happenings and Comments in the Field of Architecture and the Allied Arts

Dallas Architects Organize

The Dallas Architectural Club announces its founding and organization on the second of June, 1920. The purpose of the organization is, primarily, the bringing together of individuals interested in architecture and its allied art, in and about Dallas, for the general good of the profession in the community.

The active membership is limited to architectural draftsmen. The practicing architects of Dallas have been invited into membership as "patrons of the club," while contractors, material men and others indirectly interested in the profession may obtain membership as associate members.

It is the intention of the club to maintain an atelier beginning in the fall, and, by means of exhibitions and talks on things architectural, to stimulate the public as well as the professional interest in architecture.

Club quarters have been obtained in conjunction with the Arts Club of Dallas at 108 North Poydras street, where meetings are held the first and third Mondays of each month. Communications may be addressed to Mr. J. A. Williamson, secretary, at the above address.

Chicago Artist Offers Prize to Architects and Interior Designers

At a recent meeting of the Illinois Chapter, A. I. A., Mr. Joseph Pierre Birren, a well-known Chicago artist, delegate of the Chicago Society of Artists, proposed to give a prize of fifty dollars to be awarded at the annual exhibition of architects in 1921 for the best design in color showing an interior of two walls with at least one window, one door, a mantel and appropriate spaces for the distribution of the following standard sized paintings: one 34x40, one 20x24 and one or two 16x20 framed canvases. (Sizes are exclusive of frames.)

The object of this "Birren prize" is to bring about a co-operative spirit between architect and artist painter and stimulate the architect's desire to make a more artistic appropriate use of wall spaces than has been the tendency of the past. It is Mr. Birren's contention that less expense in mouldings and plastic ornamentation and more thought given to the painter's art in the proper handling of flat surfaces would be restful, more comfortable and pleasing to the eye.

It is also contended that framing and hanging of pictures as at present practiced is inconsistent with present interior designs and taste, and that the mouldings and ornamentation of frames is often ridiculously unrelated in style to a well designed interior and that it be made the architect's business to suggest fitting and harmonious moulding for frames and tasteful installation of the canvas on the wall, thereby working in sympathy with his client, the possible owner of cherished and appropriate pictures—working with the owner or tenant of the building and creating a co-operative harmony, rather than is so often practiced by that method of washing one's hands of a troublesome, unsolved problem and advising the exclusion of painting art, will unquestionably eventually tend toward a disorganized condition of all the arts related to building.

Mr. Birren believes that the day of temporary suspension hanging of paintings in permanent spaces is passing and that instead framed pictures should be fastened flat against the wall with a frame, which in design and pattern of moulding is related to and in keeping with other mouldings of the room and treated so that it would blend or recede to the wall and making it a part of the wall. The matter of color appropriateness of the picture comes more within the province of the painter, and co-operation would be welcomed by the client. It seem difficult to accept low-keyed paintings in our present high-keyed interiors and artists feel that they should be consulted by those who wish to have their paintings show to advantage when making color changes.

National Commission of Fine Arts Report

Containing a review of the progress made in carrying out the plan of Washington prepared in 1901 under the direction of the late Senator McMillan by the commission composed of Messrs. Burnham, McKim, Saint-Gaudens and Olmsted and outlining the work to be done in the immediate future for the development of the National Capitol. Including also material on the improvement of Army and Navy medals and insignia, a discussion of the plans for

American cemeteries in France, and advice to persons interested in erecting war memorials There is a chapter on the memorials now being erected in Washington. 148 pp. and 70 illustrations, including a full set of pictures of the Lincoln Memorial. (Apply to the Government Printing Office).

D. R. Boyd to Represent Allied Building Trades

The Council of the Allied Building Trades, at a meeting of its executive committee in Philadelphia, has requested D. Knickerbacker Boyd, former secretary and vice president of the American Institute of Architects and a leader in local construction and city planning movements, to act as spokesman for labor in all affairs under its jurisdiction. The council represents nineteen different labor unions in the American Federation of Labor.

The delegates discussed the fact that there was very little co-operation in the building construction field. Both labor and the employers held meetings of their own, which did not tend to solve the questions causing strife between the organizations. It was finally decided, without a dissenting vote, to have Mr. Boyd act as the representative of organized labor, although he does not belong to that branch of the building industry.

Good New Work the Milestone of Progress

Willis Polk advises the architectural student as follows:

"Old stuff can't be made new; new stuff shouldn't be made old; good stuff alone may invite the toning of Time's delicate palette. First of all, make it good; second, make it new; third, antique it if there is no other way to attain results."

Moral: Good old stuff, is better than poor new stuff, but good new stuff is the milestone of progress.

All-Weather Employment for Builders

One of the features in a home building experiment in Manchester, England, as given in the last Monthly Labor Review, is the provision made for full week or all-weather employment by having one staff for both inside and outside work. In fine weather all the workers are concentrated on outside jobs and in wet weather they are shifted to the inside. This method will result in having many houses at different stages of completion at one time and calls for a corresponding large working capital, but Manchester stands ready to meet this difficulty.

The municipality is to provide the funds for erecting 1,000 houses in one of its suburbs, while the building guild is to furnish not only the manual labor, but also the technical and administrative workers. The city is to pay the labor cost and 10 per cent. additional and is to receive the houses when they are built. The extra 10 per cent. is to cover losses, transportation cost, etc., and the city council is to buy the building material.

Recreation Suggestions

Three pamphlets published by Community Service (Incorporated), 1 Madison Avenue, New York City, the first one in cooperation with the Playgroundand Recreation Association of America: "Community Recreation," December, 1919, 122 pp., containing suggestions for recreation boards, superintendents of recreation, and community recreation workers; "Comrades in Play," February, 1920, 84 pp., describing leisure-time activities which the young men and young women of American can enjoy together; "Summer Camps, Municipal and Industrial." June, 1920, 43 pp. Each one of handy size and full of practical, detailed information.

Senate Resolution 350

Whereas, The general construction of houses, manufacturing establishments and buildings necessary for the development of the nation's resources, the production of essential materials, and the amelioration of present housing conditions, was curtailed by Federal action during the war and is now seriously hampered by an unprecedented demand for consumables and luxuries which has diverted capital, labor and materials into non-productive or non-essential fields; therefore, be it

Resolved, That a committee of five Senators, consisting of three members of the majority party and two members of the minority party, appointed by the President of the Senate, is hereby authorized to inquire into the report to the Senate on or before December 1, 1920:

(a) The existing situation in relation to the general construction of houses, manufacturing establishments, and buildings, and the effect thereof upon other industries and upon the public welfare; and

(b) Such measures as it may deem necessary to stimulate and encourage such construction work, to encourage popular investment rather than spending, to foster private initiative in building, and to insure co-operation between labor and persons or corporations engaged in transportation, banking, or

other business necessary to the development of such construction.

Such committee is hereby authorized during the Sixty-sixth Congress to sit during the sessions or recesses of the Congress, at Washington or at any other place in the United States, to send for persons, books and papers, to administer oaths and to employ experts deemed necessary by such committee, a clerk and a stenographer to report such hearings as may be had in connection with any subject which may be before such committee, such stenographer's service to be rendered at a cost not exceeding $1 per printed page, the expenses involved in carrying out the provisions of this resolution to be paid out of the contingent fund of the Senate.

The committee appointed consisted of W. M. Calder (New York), chairman; W. S. Kenyon (Iowa); W. E. Edge (New Jersey); E. J. Gay (Louisiana), and J. O. Wolcott (Delaware).

If your firm is being held up in the execution of any contracts for buildings you should communicate with the Senate Committee.

News from Various Sources

A competition for plans for the reconstructions, extension and embellishment of the city of Lille has been inaugurated. Full information on the subject can be obtained at the Renaissance des Cites, 23, rue Louis-le-Grand, Paris.

* * *

U. S. Senate Special Committee on Reconstruction and Production is holding first hearings in New York bearing upon transportation and fuel necessary for general industry and construction.

* * *

An organization calling itself the "Society of Decorators" has been formed at 9 West 47th street, New York, to place interior decorating on a professional plane, to raise the aesthetic standards, to write a code of ethics and to protect the public against the incompetent, happy-go-lucky practitioners now engaged in decorating as a business.

* * *

Dr. Royal S. Copeland, representing New York at the International Housing Conference at London and the Royal Institute Health Conference at Brussels, states that in Europe it is recognized that the housing problem has become so pressing as to demand its recognition as a public utility, to be dealt with as is any other public necessity.

It is stated by Dr. Copeland that typhus and cholera are epidemic in Europe, and that London's milk supply cannot compare with the purity and safety had in this country.

Personals

Rosell, Edward Mitchell & Co., Ltd., architects, engineers and town-planners, have moved their main office to 817 Fourteenth St., N. W., Washington, D. C., from Norfolk, Va. Manufacturers' catalogues are desired.

Bollard & Webster have moved from 303 McCagne Building, Omaha, Neb., to 521 Paxton Block, same city.

Walter B. Wills, Inc., architect and engineer, announces the removal of his offices from 1181 Myrtle Ave. to 1159 Myrtle Ave., Brooklyn.

Samuel Gardstein, architect, 1154 47th St., Brooklyn, has recently established his main office at 26 Court St. The former address will be maintained as a branch.

National Engineering Service Corporation, which maintains its headquarters in the Middle West, has recently opened an Eastern office at 30 Church St., New York City.

Severance & Van Alen, architects, have moved their offices from 111 East 40th St. to the building they recently bought and remodeled for their own use at the southwest corner of Lexington Ave. and 41st St.

McLanahan & Bencker, Bellevue Court Building, 1418 Walnut St., Philadelphia, Pa., is the name of the architectural firm which was known before July 1 as Price & McLanahan.

James A. McCarroll, architect, formerly located at 200 Montague St., Brooklyn, N. Y., may now be found at 33 Clinton St., Brooklyn.

Henry Firth, architect, is located at 8515 Bay Parkway, Brooklyn, N. Y.

G. C. Freeman, of Reading, Pa., has announced the removal of his architectural office from 111 North Eleventh St. to the Reading Liberty Bank Building.

Kallich and Subkis, architects, formerly at 2208 Bath Ave., Brooklyn, have moved to 7922 Twenty-first Ave., Brooklyn.

I. W. Eisinger, architect, announces his present address as 21-23 West Thirty-sixth St., New York City.

Morris Schwartz, architect, is located now at 1400 Broadway, New York City.

H. C. Meyer, architect, of 357 Flatbush Ave., Brooklyn, has formed a partnership with Joseph Mathieu, known as Meyer & Mathieu.

Weekly Review of the Construction Field

With Reports of Special Correspondents in Prominent Regional Centers

One hears of a summer lull. The many projects that have kept indefatigably on their way through difficulty after difficulty are not feeling any bad effect from the season of the year. And though it is true that new business is not noticeable, the opinion generally expressd is that this is more directly due to the many obstacles in the way of financing and accomplishing construction and that there is a holding off in the expectation of better times ahead.

The attempts of the Federal Reserve banks to limit the loans to requirements of essential rather than speculative enterprise have been fairly successful, but have not accomplished any decided reduction of the credits outstanding. The influence, however, is toward stability and though it directly concerns the transitory requirements—such as the matter of crop moving, for example—the investments in building and industrial activities must eventually feel its good effect.

Production seems to have developed from a byword into a fact—if the statistics of some of the more basic materials may be accepted as indicative. since March of this year, which was an exceptional Pig iron production in June was at the highest figure month, and approaches near to the average monthly production of the maximum year, i. e. 1916. Bituminous coal averaged in June ten million tons weekly production, which is two million in excess of the 1919 average. It is not expected in the face of transportation inadequacies that this rate of production can be steadily maintained, but it is encouraging and valuable to know these things as an evidence that we are hitching along.

Manufacturers generally are reporting increased difficulty in securing raw materials. But their chief difficulty is shown in a striking way by the case of the National Tube Co., which shut down on July 3 because of a congestion of finished material, but has now again begun operations. It was stated before the Interstate Commerce Commission that this company's stock on hand aggregated 100,000 tons.

(By Special Correspondence to The American Architect.)

CHICAGO.—The continued seriousness of the traffic outlook and the prospective coal shortage is causing uneasiness in Chicago's business and industrial circles. Many industrial leaders are advocating the voluntary closing of plants for thirty or sixty days in order to accumulate a coal supply, claiming that only a drastic measure of this sort will avert a severe depression later. Already hundreds of men are out of work through the shutting down of industries because of lack of coal.

The building situation in Chicago is practically unchanged. The demand for new building continues unabated, but the industry is proceeding at such a disadvantage that it is exceedingly doubtful if the present season will accomplish any appreciable reduction in the house shortage. Building permits of this city do not show the actual situation, since many projects are abandoned after the permits were taken out.

Although, in building circles, considerable relief is expressed over the rail award, no immediate improvement is looked for in the transportation of building materials. This week's report of the railroads shows further decrease in the shipment of lumber, amounting on one road to but 38 per cent. of the movement in the same week of last year.

Housing conditions are growing worse and constitute a severe menace to the city, say housing experts. "Something must be done," is the cry. In defense, the builders claim they are helpless to remedy the situation and point out that a recognition of the importance of their industry must come from the railroads and the Government before anything can be accomplished.

In the recent hearing granted to construction and material interests by the Interstate Commerce Commission, Mr. Lemuel F. Owen, manager of the Chicago Building Materials Exchange, made an able report dealing with construction conditions in Chicago during the past five years. Mr. Owen says in part: "Upwards of 10,000 families are without homes, 40,000 people were denied admission to hospitals during the month of June because of lack of space, over 30,000 school children are housed in schools and basements which are poorly heated and unventilated." He concludes his report with this significant statement: "Under present operations these same conditions will last for an indefinite period."

The construction problems of Chicago are most serious and merit earnest consideration by the United States Senate Committee on Construction, which is expected to begin hearings in this city next week.

(By Special Correspondence to The American Architect.)

SEATTLE.—Only slight changes in the situation are needed to produce a hopeful response in the building trade on the Pacific Coast, and jobbers in

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this territory were considerably heartened during the week by the improvement in the delivery of sheet metal. All manufacturers of the East seem able to promise, however, is that sometime within the next four months they hope to get production and delivery somewhere near normal. Prices are almost invariably stationary.

To complaints of poor delivery Western mills reiterate their pleas that they cannot get cars for shipping raw productions in, nor cars to ship manufactured materials out—and while it is extremely difficult to get sufficient skilled labor to turn out small pipe and nails, they believe that if the car situation could be relieved, jobbers would have little cause for complaint.

Conditions in the steel market on the Pacific Coast are identical as to prices, and all large jobbing centers have been encouraged this week by the acceptance in Eastern mills of placements for the fourth quarter. The mills specifically state that the delay in delivery on the Coast is due to congestion in the Chicago car zone.

There is no improvement in receipts of vitroware or enamel ware. Stocks all along the Pacific Coast are low, but the demand is not heavy. Manufacturers of these essentials wire that they are hopeful of an improvement by December 1. Jobbers are carefully studying the wheat movement, as it is believed cars will be marshalled by the common carriers to take care of this as a preferential over all building materials. West Coast fir lumbermen have already conceded this point, and are not hoping for better than 25 to 30 per cent. of a normal car supply until the wheat has been warehoused.

Offerings on the Coast of roofing and plaster board have been so heavy that the market has receded. Jobbers are able this week to quote plaster wall board at $55, as against $60 per 1,000 square feet. Cement is short in California, but in the North Coast territory jobbers have been fortunate in picking up odd lots. Scarcity of cars and of sacks is the primary reason for the cement shortage here.

Fire brick has been advanced to $75 and $80 delivered in the first building zone. Arrivals of materials from the East are poor in the North Coast territory, but California jobbers are more fortunate, as stocks of fire clay and which cement, there are plentiful. Seattle jobbers can get delivery in ten days by placing orders in the South as against the East. Discrimination is being hinted at.

The West Coast fir lumber mills received from the railroads a total of 1,330 cars for shipping lumber to eastern builders, 1,000 less than was demanded. The delivery this week is averaging 25 per cent. of normal. One of the larger mills got 74 cars, against an order for 400. The fir lumber market is $3 to $5 higher mill basis on finishing assortments and $1 to $2 higher on dimension—due exclusively to the car shortage, as new business is light. Orders for lumber coming in now are filling out retail yard stocks in the country and not the buying for city building.

A majority of the fir lumber mills have been idle since July 4, and it is announced that they may not resume until there is an improvement in the car situation. A brisk buying movement in fir lumber is anticipated when the new transcontinental freight rate advance is announced.

A brisk and higher autumn market in paints and oils is predicted by the paint trade. Lead is arriving from Chicago and San Francisco in increasing volume. General use of light colors will be the rule.

(By Special Correspondence to The American Architect.)

WATERBURY, CONN.—During the last few days large numbers of brass workers in the Naugatuck Valley have gone back to work after an idleness of about three months. The men struck about the middle of April, and since then the Connecticut brass mills have been working only part time. As the products of these plants enter to a large amount in building construction in one form or another, a resumption of full time should be welcome news.

Large quantities of copper ordered for delivery during the second quarter were deferred in shipment. The railroad strike, which also occurred during this period, tended further to restrict the movement of raw supplies and the transportation of finished goods outward bound. In the meantime, the mills have been working up their raw copper stocks. It is expected among the producers that the buying for domestic account will be resumed in a few days.

It has been noted recently that tightness of money has developed into the chief cause for housing congestion. It is impossible to obtain anything like the amount of a loan on property such as could be secured in the past, since in some quarters there is a general fear that the real estate market is due for a decline. High prices of building materials and labor add still further to the difficulties of the situation.

The Federal Reserve Board seems to have nothing to offer in the way of remedy except to repeat its admonition to "work and save." The board can exercise supervision over commercial paper, but not investment paper, and cannot give any preferential approval to one class of borrowers over another. So long as the banks of the country are loaded up with Government bonds on which the public has not completed payments, officials point out there is little relief in sight in the money market.

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TEST SLAB UNDER FINAL LOAD

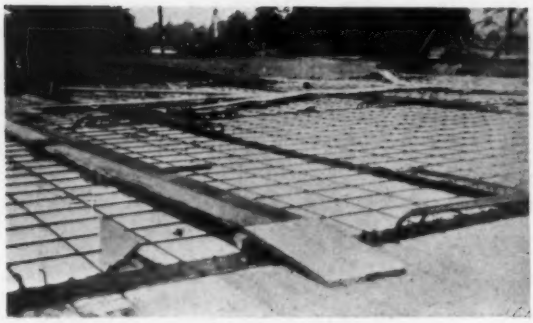
Tile and Concrete Floor Shows to Advantage Under Test

Bureau of Standards Investigation Produces Valuable Design Data

WHILE new types of construction are constantly appearing, only those of proven merit should be employed in the building of any structure. Originators of such new forms of construction have complained that only with difficulty, if at all, could they persuade the architect to give serious consideration to their claims with a view to having their system specified for some structure being planned by him. The architect, though ever alert to learn of improved methods of building, by which it may be possible to execute his design more efficiently and economically, of necessity shows a conservative attitude when it comes to departing from the beaten path of precedent. His professional duty to his client compels him to be reasonably sure that he is making a wise selection when specifying new materials, or new combinations of known materials.. Of course, after any new system of construction has been employed with successful results in several structures a greater degree of confidence is naturally felt in the claims made for it, and its extended use becomes less difficult.

The characteristics of any new form of construction claiming the attention of architects should not be left to speculation, or to be discovered after the building in which they are employed has been erected, if it is possible to determine them by reliable tests. Whenever such tests are made, the results should be given the widest publicity.

The extensive series of tests recently conducted upon a type of floor construction, which appar-



REINFORCEMENT FOR TEST SLAB IN PLACE

ently possesses many meritorious features, are, therefore, of particular interest to the architectural profession. The system employs hollow tile in combination with reinforced concrete. From a cursory inspection of the photographs, it might be assumed that the construction tested does not possess any novel features, and it is true that combination systems similar to this have been used to a limited extent (See AMERICAN ARCHITECT, Sept. 3, 1919, page 321). Upon further study it will be noted that no concrete slab above the tile has been employed. In most of the combination tile and concrete systems hitherto employed, it has been customary to pour a 2 inch or thicker top slab over the tile, and this in connection with the concrete ribs forms a series of reinforced concrete Tee beams, the tiles being considered simply as fillers to reduce the dead load below what it would be were a solid concrete slab employed. In the design tested, the orinigators believed that the tiles were not mere fillers, but became an actual and integral part of the flat slab and aided the concrete in resisting both compressive and shearing stresses. That this is true, the results of the tests clearly indicate. However, it was necessary to conduct an investigation of this nature in order to lay the basis for economical design.

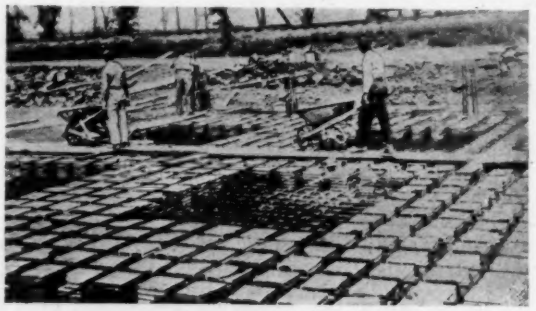
The purpose of the test, as stated in the report, was to obtain data which would afford a basis for the design of a concrete and hollow tile floor reinforced in two directions. The test was planned to obtain information on: (1) The effect of variation in the ratio of length to width of panels upon the bending moments in two directions at right angles to each other; (2) the relation of maximum negative moment to maximum positive moment in the same panel; (3) distribution of tensile and compressive stresses at sections of maximum negative and maximum positive moment; (4) the amount of deflection of the slab and girders under different loadings, and (5) the location of the point of zero stress in order to determine the length of reinforcement required to give proper anchorage beyond points of support.

For the purpose of obtaining the data desired, a large floor slab consisting of 18 panels was constructed at Waynesburg, Ohio, in 1919. Measurements to determine the stress under different loads were taken on approximately 900 gage lines in the reinforcement, 500 gage lines in the concrete and 75 gage lines in the tiles of the slab. Deflections were observed in 40 places. To obtain additional information on the action of the tiles in this type of floor, two small slab specimens, termed "control slabs," were constructed upon which strain gage measurements were taken in the reinforcement, the concrete and the tiles.

The test was made for J. J. Whitacre of Waynesburg, Ohio, under the direction of Mr. W. A. Slater representing the Bureau of Standards, with the cooperation of Professor R. H. Danforth of the Case School of Applied Science, Cleveland, Ohio. The slab was constructed under the supervision of Mr. Anthes. The observations used in the report were made by Messrs. Anthes, Hagener and G. G. Scofield, all experienced observers in this line of investigation. Acknowledgment is made of the valuable assistance of R. R. Zipprodt of the Bureau of Standards during the concreting of the slab and its preparation for test and in organizing the work of testing. The report was prepared by Messrs. Slater, Hagener and Anthes.

Tests of the materials used in the slab were made at the laboratory of the Case School of Applied Science.

The average results of tests on six specimens of reinforcement used in the slab gave a yield point of 53,560 pounds per square inch and an ultimate strength of 87,220 pounds per square inch. Tests made on eleven 6 by 12 inch concrete cylinders made during the pouring of the concrete for the slab gave an average ultimate strength of 2,030 pounds per square inch at an age of 35 days, and



CONSTRUCTION OF FOOTINGS

A continuous slab of reinforced concrete and hollow tile was placed to guard against settlement

for 8 cylinders tested at an age of 115 days, the average ultimate strength was 2,980 pounds per square inch.

The tiles were furnished by the Whitacre-Greer Fireproofing Co. of Waynesburg, Ohio. They were of the six-cell type, 6 by 12 by 12 inches in size and weighed approximately 30 pounds each.

Tests on 8 specimen tiles with the load applied on the open ends gave an average ultimate strength of

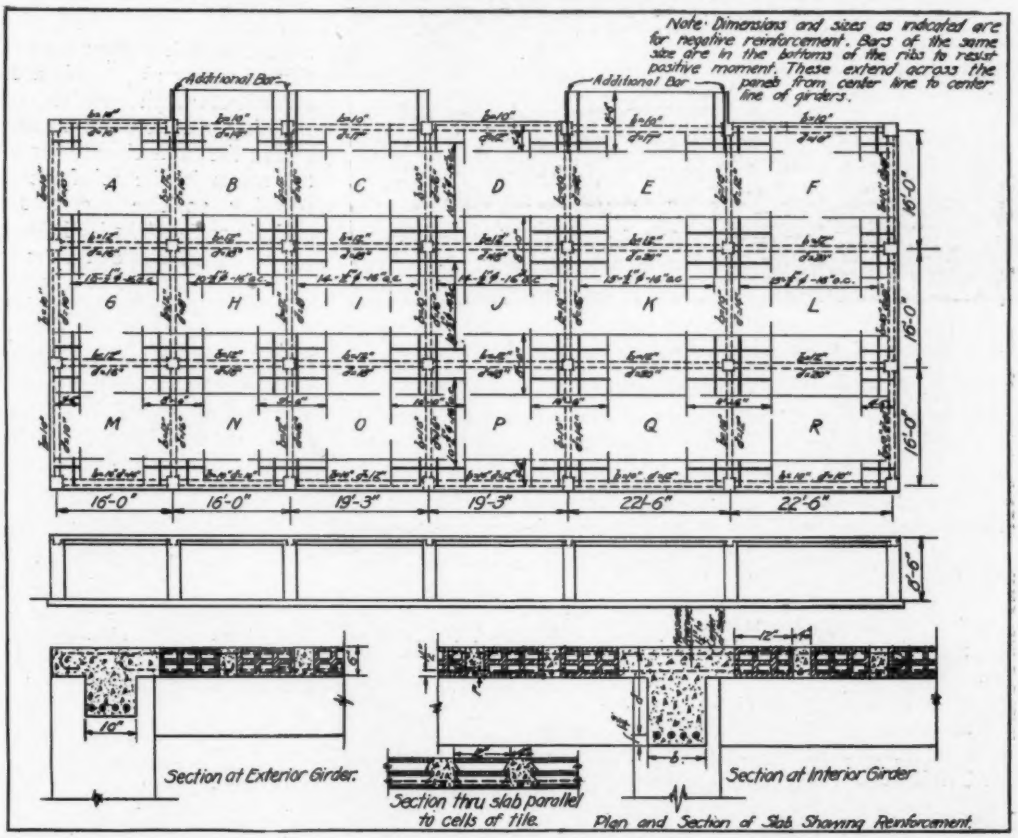


FIG. 1. PLAN OF TEST SLAB SHOWING REINFORCEMENT
Cross sections indicate method of placing tiles

4,920 pounds per square inch, and for 6 specimens in which the load was applied perpendicular to the axis of the cells, the average ultimate strength was 4,000 pounds per square inch.

The compressive strength was computed on the basis of the net area of the section through the cells parallel to the bearing surfaces .

Design and Construction of Slab. The slab was 117 feet 6 inches long by 50 feet wide, divided into 18 panels. Six of these panels were 16 feet square; six were 16 feet by 19 feet 3 inches, and six were 16 feet by 22 feet 6 inches. These panel dimensions were measured from the center to center of supporting columns. The panels were supported by reinforced concrete girders, the stems of which were generally 12 inches wide, making the clear spans about 12 inches less than the dimensions given above. The slab was made of 6 by 12 by 12-inch clay tiles laid in concrete and arranged in rows at right angles to each other. The rows in both directions were separated by ribs of concrete 4 inches wide and 6 inches deep. The tiles throughout the slab were laid with the cells running in the north and south direction, that is, the short direction of the oblong panels. The ends of the tiles were left open, allowing a small amount of concrete to enter and making the tiles form an integral part of the slab.

Each concrete rib between rows of tiles was reinforced in the bottom with one ½-inch plain round bar extending the full length of the rib and in the top with one ½-inch plain round bar at each end which extended from a point one-fourth of the span length from the end of the rib and passed through

UNDER SIDE OF TEST SLAB
Holes in concrete show points at which strain gage readings were taken on reinforcement

the top of the supporting girder into the rib on the opposite side of the girder. The centers of the bottom bars were 1 inch and 1½ inches from the bottom surface of the rib for the short and long directions of the panel, respectively. The centers of the top bars were 1¼ inches below the top of the rib. The top bars were hooked at their ends to prevent slipping. Figure 1 shows the design of the slab.

In order to avoid any chance of settlement of the footings, a continuous flat slab foundation was constructed.

Work on the footings began on July 26, 1919. The columns were poured on September 25 up to the soffits of the girders, and the slab was poured between October 2 and October 10, 1919.

Radial chimney bricks were used as loading material. To prevent arching of the load and to leave all of the gage lines accessible on top of the slab, the load on each panel was divided into four stacks, as shown in Figure 2.

To avoid difficulty in stacking the bricks, due to slight irregularities in the surface of the slab, sand cushions 1½ inches thick were laid before any bricks were placed. The sand was retained in place by wooden frames which defined the size of the piles and the location of the aisles and served as screeds for leveling off the sand cushions upon which to apply the load.

Loading began on December 20, 1919, and continued at intervals up to February 5, 1920. The loaded areas and the intensities of the load on the latter date are given in Figure 2. This load is termed the "maximum uniform load." For this total amount of load no other practicable distribution would have produced a higher negative moment.

The maximum uniform load was left in place until April 3, 1920. Shifting of the load from one part of the slab to another was then begun and continued up to April 22, 1920. The load was shifted in such a way as to maintain as nearly as possible a constant stress in the reinforcement resisting the negative moments and at the same time to increase the stress in the reinforcement resisting positive moments in typical panels. The loaded areas and the intensities of the load on April 22 are given in Figure 3. This load is termed the "final load."

The load per square foot was obtained by dividing the total load on the panel by the area of the panel within the girder lines, that is, the area represented by the product of the clear spans. This method was found by approximate analysis to give values of bending moments which did not vary by more than two or three per cent. from the moments computed from the loads as actually placed.

The deformation in the reinforcement and in the concrete under the applied loads were observed with a strain gage having a gage length of four inches and in the tiles with a strain gage having a gage length of eight inches. The multiplication ratio of each instrument was 5 : 1.

Considerable study was given to determining a basis for correcting the strain gage readings for changes in the length of gage lines due to changes in weather conditions. As a result of this study, it was decided that the most satisfactory basis for making corrections in the strain gage readings was to assume that the readings varied directly in proportion to the temperature changes.

Recorded deflections are given in tables 1, 2 and 3. Recovery due to partial removal of the load is shown in table 4.

TABLE 1—DEFLECTION FOR SQUARE PANELS UNDER CONSTANT LOAD.

Panel	Applied load in lb. per sq. ft.	Time under constant load in days	Deflection: After one day inches	Deflection: Final inches
H (Interior)	160	7	0.00	0.00
A (Exterior)	160	7	0.08	0.10
H (Interior)	210	7	0.00	0.00
A (Exterior)	210	7	0.12	0.12
H (Interior)	397	52	0.09	0.22
A (Exterior)	372	53	0.37	0.70
H (Interior)	730	30	0.55	0.68
A (Exterior)	615	23	1.36	1.52

TABLE 2—DEFLECTION FOR INTERMEDIATE SIZE RECTANGULAR PANELS UNDER CONSTANT LOAD.

Panel	Applied load in lb. per sq. ft.	Time under constant load in days	Deflection: After one day inches	Deflection: Final inches
I (Interior)	230	11	0.10	0.11
P (Etxerior)	230	13	0.14	0.17
I (Interior)	280	55	0.15	0.26
P (Exterior)	280	55	0.28	0.44
I (Interior)	605	25	0.86	1.15
P (Exterior)	525	22	1.19	1.52

TABLE 3—DEFLECTIONS FOR LONG PANELS UNDER CONSTANT LOAD.

Panel	Applied load in lb. per sq. ft.	Time under constant load in days	Deflection: After one day inches	Deflection: Final inches
K (Interior)	230	69	0.11	0.11
F (Exterior)	230	69	0.39	0.73
K (Interior)	505	25	1.04	1.32
F (Exterior)	370	25	1.33	1.72

TABLE 4—RECOVERY FROM DEFLECTION UPON REMOVA OF LOAD FROM EXTERIOR PANELS.

Panel	Applied load in lb. per sq. ft.	Load Removed: Deflection in inches	Load Removed: Lb. per sq. ft.	Load Removed: Per cent. of applied load	Recovery: in inches	Recovery: Per cent. of deflection	per cent. of load Removed per cent.
G (Square)	397	0.65	321	81	0.33	51	.63
O (Int.)	280	0.52	229	82	0.29	56	.68
E (Long)	230	0.31	148	64	0.34	110	1.71
L (Long	230	0.53	158	69	0.45	85	1.24

A careful study of these deflection tables is interesting. It must be remembered that the slab was but 6 inches thick and the panels varied from 16 feet square to 16 feet by 22 feet 6 inches center to center of supporting girders.

It will be noted that for panel "H" a square interior panel, no deflection was recorded under an applied load of 210 pounds per square foot after this had remained in place 7 days and only 11/16 inch under a load of 730 pounds per square foot after this increased load had remained in place for 30 days. The deflection recorded for panel "A," an exterior square panel, was greater, as was to be expected, but this could not be considered excessive. The greatest deflection recorded was 1.72 inch for "F," an exterior long panel, under a load of 370 pounds per square foot in place 25 days.

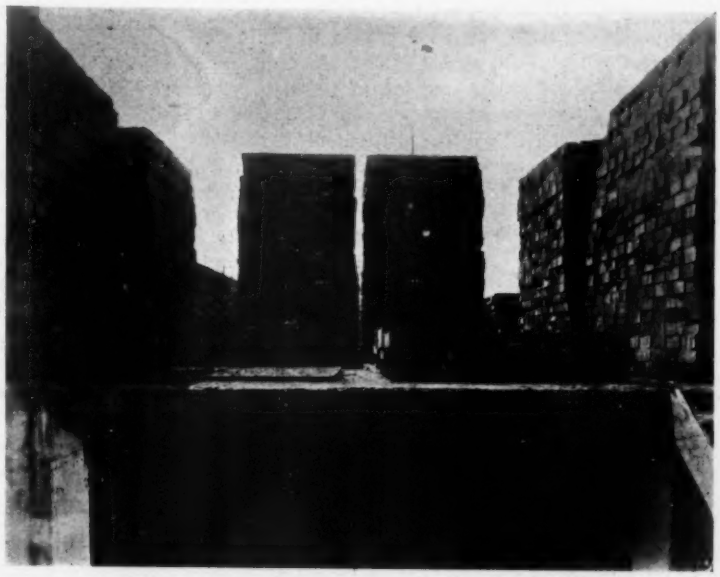
From table 4 (last column) it will be seen that the per cent. of recovery for each per cent. of load removed varied from .63 to 1.71. In the latter case no deflection existed after approximately 60 per cent. of the load had been removed. The recovery in the panels referred to in table 4 was assisted by the increase in load on the adjacent panels simultaneously with the decrease in load on panels G, O, E and L.

Auxiliary Slabs. The two slab specimens termed control slabs already referred to, were 2 ft. 6 in. wide and 12 ft. long and of similar construction to the large slab. They were constructed in order to determine the effectiveness of the tiles in resisting compressive stresses in this type of construction. Fig. 4 is a view of one of these slabs under load. The load was applied by the reaction of two springs which had been previously rated in a testing machine, obtaining the amount of compression corresponding to a given load.

The central concrete rib in each of the control slabs was reinforced in the bottom with three 5/8-in. round bars. This gave a much higher percentage of reinforcement than was used in the large test slab. This was necessary in order to obtain large deformations in the tiles and concrete before failure.

The longitudinal axes of the cells of the tiles at mid span were parallel to the span in control slab No. 1 and perpendicular to the span in control slab No. 2. Control slab No. 1 was tested at the same time as the large slab, under loads giving stresses in the reinforcement as nearly as possible the same as the stresses in the negative reinforcement in the large slab. The test extended over a period of 84 days. Control slab No. 2 was tested to failure in one day, April 15, 1920, observations being made under different loads before failure.

Reliability of Results. Because of the unusually severe weather conditions in January and February, extreme precautions had to be taken to secure accurate strain gage readings and to protect the observation points from damage. In order to secure accuracy of readings, check readings were



CLOSE-UP VIEW OF SLAB UNDER FINAL LOAD

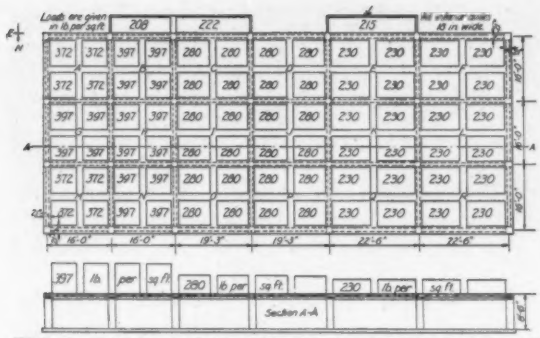


FIG. 2. DIAGRAM OF MAXIMUM UNIFORM LOAD
Showing location and intensities of load which remained in place from Feb. 5 to April 3, 1920

frequently taken. In some series readings were taken for each gage line twice, or even more if necessary to obtain satisfactory check readings. Due to the favorable weather in April, it is believed that the error in readings taken at that time was considerably less than the error in the readings taken in January and February. The total error in the corrected observations probably did not often exceed plus or minus one division of the instrument, which is equivalent to a stress of 1,500 lb. per sq. in. in the reinforcement.

The complete report is most exhaustive and contains numerous tables and charts giving the entire results of all the readings. It is not possible, due to limited space, to reproduce these, but the essence of these many observations and the deductions made therefrom are contained in the following summary, taken from the report.

Summary. Deformations in the tiles were approximately 70 per cent. as great as those in the concrete. This shows that the tiles contributed a proportional share to the strength of the slab. The unit stresses in the tiles must be equal to, or greater than, the unit stresses in the concrete.

In this type of construction, it seems reasonable that the ribs of the tile in contact with the concrete

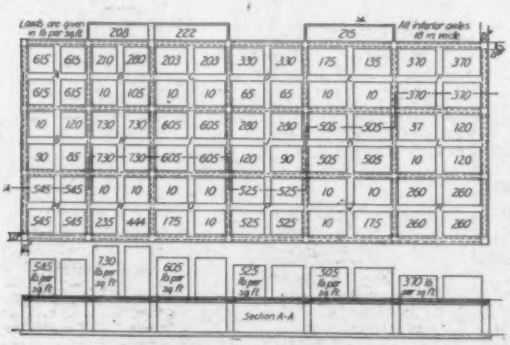


FIG. 3. DIAGRAM OF FINAL LOAD
Shifting of load commenced April 3, and was completed April 22, 1920

ribs should be considered as being effective in resisting shearing stresses equally with the concrete. The test results indicate that the ribs of the tiles were effective in resisting shearing stresses.

Average values of the negative resisting moment of the stresses in the reinforcement where the bars cross the edges of the slabs are given in table 5.

TABLE 5—NEGATIVE MOMENTS IN INTERIOR PANELS

Basis of coefficients	Direction of moment	Square panels	Intermediate sized panels	Long panels
Live load only	Short direction	.0193W1	.0195W1	.0446W1
	Long direction	.....	.0231W1	.0201W1
Sum of live and dead loads	Short direction	.0171W1	.0255W1	.0366W1
	Long direction	.....	.0196W1	.0165W1

In a few cases maximum values exceeded the average by as much as 33 per cent. The intensity of the measured stress from which these moments were computed was generally close to the yield point. The load on the slab was 397 lb. per sq. ft. for the square panels, 280 lb. per sq. ft. for the intermediate size panels, and 230 lb. per sq. ft. for the long panels.

At the stage of the test at which the negative moments given in table 5 were developed the stresses at the centers of the spans were resisted

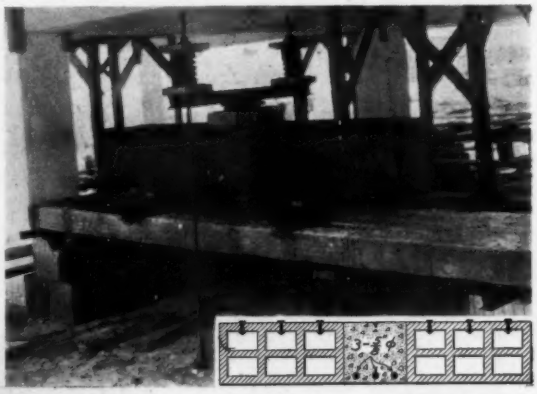


FIG. 4. VIEW OF CONTROL SLAB NO. 1.
Insert shows cross section; the black marks on top surface of tiles are points at which deformation readings were taker .o determine stress in tiles

so largely by the tension in the concrete that in order to obtain representative positive moments for the reinforcement it was necessary to apply more load to the slab in such a way as to increase the positive moments without affecting greatly the negative moments. For this purpose the load distribution shown in Fig. 3 was used. The positive moments for the loads in the heavily loaded panels shown in Fig. 3 averaged 49 per cent. of the negative moments given in table 5 for the loads shown in Fig. 2. The observed stresses at the time that the loads shown in Fig. 3 were in place were gen-

erally from 30,000 to 40,000 lbs. per sq. in. for the positive reinforcement in the short direction of the panel and from 16,000 to 38,000 lbs. per sq. in. for the positive reinforcement in the long direction of the panel.

The average negative bending moment for the exterior panels was 20 per cent. greater than that for interior panels of like size; in one case it was 26 per cent. greater.

By the term "Moment for the exterior panels" is meant the moment across the girder one span length from the wall.

The average positive bending moment for exterior panels was 23 per cent. greater than the positive bending moment for interior panels. This comparison was made with reinforcement extending into the wall girders.

The distance of the point of zero stress in the negative reinforcement from the edge of the supporting girder was slightly less than one-fifth of the clear span from edge to edge of the girders.

For uniform applied loads of about 175 lbs. per sq. ft. on the long panels (except corner panel R), 230 lbs. per sq. ft. on the intermediate size panels and 275 lbs. per sq. ft. on the square panels, the deflection at the center of the panels was less than 1/900 of the clear span. The deflections for the exterior panels were generally somewhat larger.

It would seem that sufficient reliable data has been made available as a result of these extensive tests, to permit of economical design of this type of floor construction, with a feeling of confidence, based not upon unsubstantiated claims, but upon as precise data as it is possible to obtain in this type of construction.

It must ever be kept in mind that expert workmanship is as essential to successful construction as accurate design, and only experienced builders

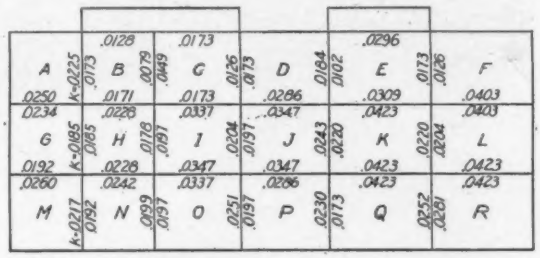


FIG. 5. DIAGRAM OF NEGATIVE BENDING MOMENT COEFFICIENTS

Values shown (based on readings taken after load had been in place 55 to 73 days) are computed from weighted maximum stresses in the reinforcement crossing the edges of the panels. These should not be confused with the average values of negative moment coefficients given in Table 5, which are the average values of all the computed values of all the panels of each type

should be permitted to carry out work of this kind.

Rigidity Tests on Various Types of Wall Construction Made by Omaha Building Department

Results Prove That Code Requirements Should Be Amended

TESTS, supervised by municipal experts, of six different types of exterior wall panels, show that forms of construction not hitherto permitted by the Omaha, Neb., building code are actually superior, from the standpoint of rigidity, to the type of frame wall construction specified by the code.

The test panels were each 4 ft. high and 8 ft. long, constructed of 2 in. by 4 in. studs, 16 in. on centers. The studs were nailed to a top and bottom sill piece with 3-20 D nails at each corner, the intermediate studs being nailed with 2-20 D nails top and bottom. These panels were covered as follows:

No. 1. Exterior: 6 in. x 7/8 in. wood sheathing, nailed with 2-10 D nails at each stud. Interior:—Wood lath nailed at each bearing by 4 D nails. No plaster or stucco.

No. 2. Exterior:—Bishopric heavy weight sheathing board nailed direct to studs with a 6 D nail through each wood strip at each bearing. Interior:—Wood lath as in No. 1. No plaster or stucco.

No. 3. Standard construction in the City of Omaha. Exterior:—6 in. x 7/8 in. wood sheathing nailed to studs as in No. 1, then covered with (a) tarred felt building paper; (b) 3/8 in. x 1½ in. furring strips 16 in. o. c.; (c) wood lath nailed to furring strips with 4 D nails; and (d) one coat Portland cement stucco with dash finish. Interior:—wood lath as in No. 1.

No. 4. Exterior:—Bishopric medium weight stucco board nailed direct to studs by one 5 D nail through each strip at each bearing; one coat Portland cement stucco, dash finish. Interior:—Wood lath as in No. 1.

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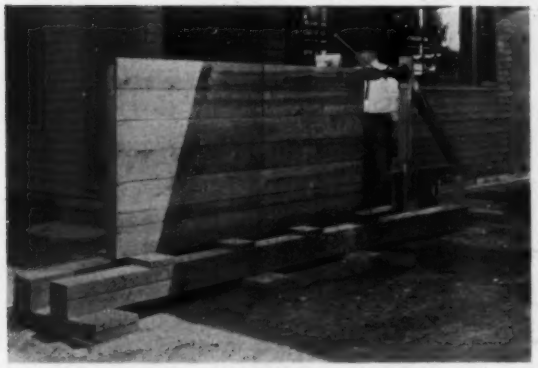


VIEW OF TEST PANEL NO. 1 BEFORE TEST

PANEL NO. 6—BACK PLASTERED METAL LATH

No. 5. Same as No. 3 except Magnesite stucco was substituted for Portland cement stucco.

No. 6. Exterior:—Back-plastered metal lath, Portland cement stucco. No interior lath.

In testing, each panel was set separately on a base of 8 in. by 8 in. timbers, 12 ft. long. The testing apparatus consisted of a screw jack for applying the load, set between the testing frame and Bell crank lever constructed of timbers and a Fairbanks platform scale. The jack acting at one of the upper corners applied increasing pressures to the frame under test, thus causing distortion. To prevent the frame under test from pulling up at the lower corner, it was secured to the base by a heavy bolt let through the frame at the corner directly below that to which the screw jack was applied.

The results of these tests are plotted on the chart (Fig. 1). They should be carefully studied. The graphs marked 4a and 6a indicate the results of a second test made on both panels No. 4 and 6.

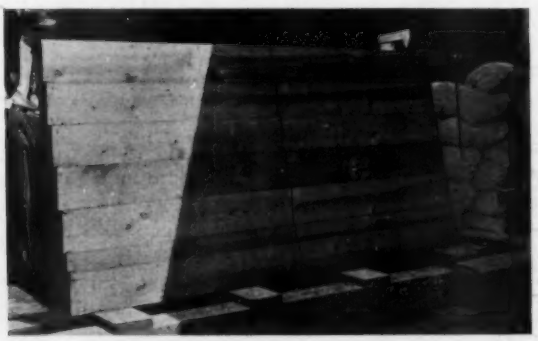
Test panels No. 1 and 2 are comparable. The results show that considerably greater stiffness was shown by panel No. 2 covered with Bishopric sheathing board than by panel No. 1 with wood sheathing. Test panels No. 3 and 4 are also comparable. Here again panel No. 4, using Bishopric stucco board, showed up to better advantage than No. 3 which is the type of construction specified by the Omaha code.

It is interesting to note from Fig. 1 that the back plastered metal lath panel, the only one in which interior wood lath was dispensed with, showed the greatest rigidity of all the panels tested.

This test panel, tested to the limit of the apparatus—3,500 lbs.—showed no cracks, while both of the Bishopric board panels showed greater stiffness than the type of construction permitted by the code.

The Omaha code should be amended and modernized in this respect at least. It would seem that there is no option in the matter. The more quickly the city officials act, the more quickly will they perform a public service.

The tests were successfully carried out through the full co-operation of the following code revision committee: Harry B. Zimman, alderman; Rodney M. Brown, former building inspector; Geo. B. Prinz, architect; A. C. Arend, consulting engineer; R. E. Myers, realtor; Rex Edgecomb, present building inspector, secretary. Their recommendations should be at once forthcoming.



PANEL NO. 1 AFTER TEST
Distortion of 5⅝ in. Occurred Under Load of 2,100 Lbs.

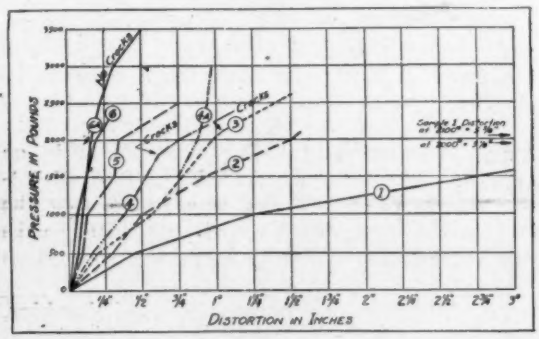


FIG. 1. DIAGRAM SHOWING DISTORTION OF PANELS UNDER TEST